

Ohio Higher Education Innovation Grant Program

Name of Lead Institution (only one)	Stark State College
Project Start Date	July 1, 2016
Primary Contact - Individual must be authorized to sign grant contract and legally responsible as representative.	Thomas A. Chiappini Vice President for Business Affairs Stark State College 6200 Frank Avenue NW, Suite S302 North Canton, OH 44720 (330) 494-6170, ext. 4256 tchiappini@starkstate.edu
President	Para M. Jones
Project Director/s	Jean Barbato ShaleNET Regional Hub Case Manager Stark State College 6200 Frank Avenue NW, Suite B215 North Canton, OH 44720 (330) 494-6170, ext. 5194 jbarbato@starkstate.edu
1) Certification by Authorized Official:	
To the best of my knowledge and belief, the information contained in this application is true and correct. The document has been duly authorized to comply with the required assurances.	
Signature of Authorized Official:	
Typed Name and Title: Thomas A. Chiappini, Vice President for Business Affairs	
Date: 03/09/16	
2) Administering Institution:	
Contact Person: Caroline Maloney	
Title: Strategic Grants Development Officer	
Address: 6200 Frank Avenue NW, Suite S306H, North Canton, OH 44720	
Email: cmaloney@starkstate.edu	
3) Educational Partners (please submit separate information for each partner)	
Institution Name: Eastern Gateway Community College	
Contact Person: Sherri Van Tassel	
Title: Vice President for Administrative Services	
Address: 4000 Sunset Boulevard, Steubenville, OH 43952	
Email: svantassel@egcc.edu	
Institution Name: Hocking Community College	
Contact Person: Keith Gandor	
Title: Department Chair of Engineering and Technology	
Address: 3301 Hocking Parkway, Nelsonville, OH 45764	
Email: gandork@hocking.edu	
4) Other Partners (please submit separate information for each partner)	
Institution Name: Malone University	
Contact Person: Cindy Lundin	
Title: Events Coordinator	
Address: 2600 Cleveland Avenue NW, Canton, OH 44709	
Email: clundin@malone.edu	

Activity	Total	Dept. of Higher Education	Education (OTC, Community College, University) Funds	Name of Education Institution	Other Partner Funds	Name of Other Partners	Activity Description Summary
Equipment (list by item)							
FlowBoss Mechatronics Trainer	\$ 40,000	\$ 40,000					The FlowBoss Mechatronics Trainer is a packaged unit that includes a local flow computer, Orifice Plates, Resistive Thermal Devices, Turbine Metering, Multi-variable Sensors and Tubing. This equipment will enable partner colleges to teach American Gas Alliance 3 and 7 Flow Metering and Custody Transfer. Stark State will provide partner colleges with four units each (8 total) to advance their PLC, Sensor, Instrumentation and Mechatronics offerings to align proficiencies with ShaleNET requirements. Each unit is priced at \$5,000 each. The project will purchase two open enterprise systems to enable partner institutions to run simulated and actual process control environments through a remote terminal. This unit will talk to lab media runs and instrumentation to monitor and maintain actual PLC processes. Each unit is priced at \$25,484 to be covered by ODHE funds.
Open Enterprise SCADA Distribution System	\$ 50,968	\$ 50,968					The Enterprise Licenses support Web4 access to the Oil and Gas Training Lab at Partner Institutions. The seat licenses will be managed by Stark State for the use of partner institutions. The project seeks to secure 16 concurrent-use seat licenses at \$1,200 per license.
Open Enterprise Seat Licenses	\$ 19,200	\$ 19,200					The Project Coordinator will be paid a base salary of \$43,068 in Year-one and \$44,145 in Year-two (includes for a 2.5% cost of living increase). Fringe benefits of 16 percent for Workers Compensation (.00397%), FICA (.0145%), Retirement (.14%), Health and dental benefits will also be provided at 8% of cost or \$17,383.76 in year one and \$19,122 in year two to account for annual insurance rate increases. Project Coordinator salary costs will be split between ODHE grant funds and other outside local funds.
Personnel - Positions							
Individual A- Project Coordinator (Stark State)	\$ 134,539	\$ 100,162			\$ 34,377	Chevron	The Project Coordinator will be paid a base salary of \$43,068 in Year-one and \$44,145 in Year-two (includes for a 2.5% cost of living increase). Fringe benefits of 16 percent for Workers Compensation (.00397%), FICA (.0145%), Retirement (.14%), Health and dental benefits will also be provided at 8% of cost or \$17,383.76 in year one and \$19,122 in year two to account for annual insurance rate increases. Project Coordinator salary costs will be split between ODHE grant funds and other outside local funds.
Individual B - Coordinator for Oil and Gas (Stark State)	\$ 87,100		\$ 87,100	Stark State College			The College's Coordinator for Oil and Gas programs will assist in implementing the ShaleNET Share project. The College will allocated 50 percent of base salary, fringe and health benefit costs (valued at \$67,100 annually) to support the project in years one and two. The project will purchase two open enterprise systems to enable partner institutions to run simulated and actual process control environments through a remote terminal. This unit will talk to lab media runs and instrumentation to monitor and maintain actual PLC processes. Each unit is priced at \$25,484 to be covered by ODHE funds.
Individual C - ShaleNET Share Advisors (Eastern Gateway/Hocking)	\$ 69,307	\$ 60,000	\$ 9,307	Eastern Gateway Community College			The project will purchase two open enterprise systems to enable partner institutions to run simulated and actual process control environments through a remote terminal. This unit will talk to lab media runs and instrumentation to monitor and maintain actual PLC processes. Each unit is priced at \$25,484 to be covered by ODHE funds.
Individual D - Adjunct Instructors (All Institutions - Paid through Stark State)	\$ 28,880	\$ 28,880					The project will purchase two open enterprise systems to enable partner institutions to run simulated and actual process control environments through a remote terminal. This unit will talk to lab media runs and instrumentation to monitor and maintain actual PLC processes. Each unit is priced at \$25,484 to be covered by ODHE funds.
Facilities							
Supplies	\$ -	\$ -					
Purchased Services	\$ -	\$ -					
Curriculum Developers	\$ 35,000	\$ 35,000					This contracted service provider from outside Stark State will work with the project team/partners to establish TAG course curriculum for submission to ODHE and HLC. The project will subcontract the work at a rate \$40 per hour for a total of 875 hours (110 days) of work. The work may be divided across several industry subject-matter experts with education experience.
Summer Program Housing	\$ 62,400	\$ 62,400					With the implementation of summer sessions, Stark State College anticipates being able to serve 24 students in the year-two summer intensive. Malone University has agreed to provide housing and meals (Mon-Thu) for ten-weeks (40 nights per student) at a rate of \$20 per student/day (rooms) and \$12.50 per student/day (meals) or \$12.50 per student/day.
External Evaluator	\$ 50,000	\$ 50,000					The project team will engage an external evaluator to provide annual evaluation services. SPH brings special value-add to the project because they have also served as the evaluator for the ShaleNET U.S. project funded by DOL and have experience with the ShaleNET outcomes and corrective actions. The evaluator will work with the project team to develop annual reports, assessment and corrective action plans.
Expanded Network Bandwidth Provider	\$ 9,600	\$ 9,600					The expanded up and downstream bandwidth requested herein supports partner college access to the Wellsite Training Center systems and sustain increased external demand on our systems from partners. The expanded bandwidth costs \$400 per month for the 24-month project period.
Travel							
Outreach (Mileage)	\$ 3,267	\$ 2,000			\$ 1,267	Chevron	Stark State College, through outside local funds, will support a portion of travel costs for this project as leveraged funds. A total of \$2,000 will be set aside in the grant funds to support outreach to existing partners and other Appalachian Basin College. Mileage will be paid at the federal rate of 0.55 cents per mile.
Building Improvements							
Other (Describe)							
Scholarships	\$ 72,000	\$ 72,000					The Project Team would offer \$1,500 scholarships to the 48 anticipated students to be served in years one and two of the project.
Print Materials	\$ 10,000	\$ 10,000					The project will provide on-campus ShaleNET related materials to partner institutions. This budget sets aside \$5,000 per institution for these materials.
Marketing	\$ 135,500	\$ 122,000			\$ 13,500	Chevron	The ShaleNET Share partners will work collaboratively with the Stark State College Marketing Department to develop and implement a three-county marketing plan. The Colleges Director of Marketing needs to include print (\$15K), outdoor (\$20K), radio (\$18K) and digital/online (\$8K) per year to saturate the three market areas. These costs will be paid through the ODHE grant funds in the first two years with a supplemental \$13,500 in leveraged funds to cover any costs for use of outside firms to develop marketing materials.
SUBTOTAL - DIRECT	\$ 807,761	\$ 662,210	\$ 96,407		\$ 49,144		
Indirect Costs (% of Direct)							
	\$ 66,100	\$ 52,977	\$ 13,207	Stark State College			Indirect costs will be charged to the ODHE grant funds at eight percent of direct costs. Stark State College has a negotiated Federal Indirect Cost Rate of 48% of Salary and Fringe. The difference between the two rates will be included in this proposal as leveraged funds.
TOTALS BY SOURCE	\$ 873,861	\$ 715,187	\$ 109,614		\$ 49,144		

Each Activity must be described in-depth the budget narrative

Implementation Schedule

Please provide a brief bulleted list of major components of grant activity taking place each term.

Term	Grant Activities
Winter 2016 (NA)	
Spring 2016 (Mar-May)	<ul style="list-style-type: none"> • Grant proposal scoping and preparation • Equipment Purchases initiated • Advising and recruitment started • Marketing scope and initial informational collateral defined • Partner alignment meeting
Summer 2016 (Jun-Aug)	<ul style="list-style-type: none"> • Articulation Agreements Finalized • Degree Plans submitted to HLC, Higher Ed • ARL234 Gas Compression and Flow Dynamics ported to Web 4 Delivery • PET141 modified to include Artificial lift • PET142 Retired • Master Syllabus created for PET143 Process Controls in Petroleum Industry • Master Syllabus created for PET144 Capstone Class • Summer Intensive course delivery plan development begins • OpenEnterprise terminal server installed at SSC • Integration of SSC well pad and lab instrumentation into OpenEnterprise begins. • FloBoss Mechatronics trainers assembly and curriculum share begins • Marketing program commenced
Fall 2016 (Sept-Dec)	<ul style="list-style-type: none"> • Web 4 course offering of Gas Compression and Flow Dynamics • Student Cohort 1 begin programs at all schools • Capstone and Summer Intensive course development continues • FloBoss Mechatronics trainers assembly and curriculum share begins
Winter 2017 (NA)	
Spring 2017 (Jan-May)	<ul style="list-style-type: none"> • Floboss Trainers delivered to partner schools • Professional Development workshop for Floboss Mechatronix Trainers
Summer 2017 (Jun-Aug)	<ul style="list-style-type: none"> • Summer intensive session • OpenEnterprise terminals installed at partner colleges • Professional Development Workshop for Open Enterprise
Fall 2017	<ul style="list-style-type: none"> • Project funding period evaluation process completed and submitted • Two-year data analysis and reporting finalized and submitted • Implement post-grant sustainability plan

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I. Trade Secrets

This proposal contains no trade secrets.

II. Executive Summary

Stark State College proposed to implement a two-year college shared/blended learning education model that draws upon research conducted across the past 25 years around K-12 to postsecondary bridging partnerships and best practices. Through the “ShaleNET Share” project, Stark State and its partner institutions seek to surface and incubate institutional and programmatic innovation through collaborative design, analysis and decision making. This project seeks to pilot a new collaborative model to generate real large-scale changes in institutional cultures and impact program offerings, support services, student success and education cost outcomes. To achieve these outcomes, the ShaleNET Share” project will pilot a 40/20 academic sharing model with Appalachian Basin two-year colleges to:

- Disrupt traditional inter-segmental gaps, educational silos, and competition for students and service-area dominance among regional two-year colleges;
- Develop a replicable two-year college shared education model that promotes student retention and success while reducing time-to-completion;
- Expand, standardize and increase access to ShaleNET degree and certificate programs at non-affiliate two-year colleges in Ohio;
- Refine of the ShaleNET curriculum to address the specific needs of Ohio’s nascent oil and gas, manufacturing, and petrochemical industries;
- Implement a shared resource/services model that mitigates redundancy, promotes operational and fiscal efficiency, enhances institutional capacity and promotes intensive student support;
- Create a summer shared faculty arrangement where oil and gas teachers can impart/gain subject matter knowledge and understanding about core concepts and pedagogical strategies; and
- Reduce student costs for two-year degree and certificate training.

This collaborative approach will enable students to obtain a ShaleNET Measurement and Mechatronics Technician A.A.S. degree by completing 40 hours of core/technical classes at their home institution and a 20-hour ShaleNET Instrumentation and Measurement Technician Certificate at Stark State College. The project design encourages significant cost saving (student and institutional) and identifies best practices and corrective actions toward development of a replicable two-year college education sharing model that can be applied to other fields of study.

PROJECT NARRATIVE

I. Project Design

ShaleNET U.S. leverages the collective experience of industry, the public workforce system, and a consortium of “affiliate” college hubs to help individuals build lasting careers in the oil and natural gas industry. ShaleNET provides upstream, midstream and downstream for-credit and non-credit education programs that respond to industry needs through a stackable credential model. This model allows multiple entry and exit points to individuals seeking an education with a standardized curriculum that enables them to continue and finish their education wherever ShaleNET is offered. Affiliate Hub partners, like Stark State College, are unique because they have committed multi-million dollar investments in ShaleNET-related state-of-the-art labs and equipment and serve as an integral part of the stackable credential model that is the cornerstone of the program.

The current economic challenges associated with oil and gas exploration are well documented. Oil and gas prices are at historical lows. Upstream jobs like drilling and hydrofracking have become scarcer. However, jobs associated with producing, processing, and transporting oil and gas have remained stable, with midstream and downstream industry partners like Marathon, Williams and Dominion seeking to replace up to two-thirds of their current retirement-age workforce over the next five years. Furthermore, the availability of inexpensive petrochemical feedstocks such as ethane and propane, as well as a protracted period of cheap electric and fuel power have already resulted in a reversal of costs. Manufacturing overseas is no longer as viable as it once was, and a critical aspect of reshoring is the availability a sufficient labor pool. Recently, Ohio became a destination for oil and gas jobs, and now we can solidify that position by also making Ohio a preferred destination for manufacturing and industry. Ohio’s technical colleges are the front line of workforce preparation and we are poised to meet this challenge through collaboration and partnership.

As an established ShaleNET U.S. Hub partner, Stark State has gained perspective regarding the process of “teching up” the workforce. We’ve learned that hands-on experience with operation and maintenance of process controls, instrumentation and electronics (aka mechatronics) is important. We have also learned that there is significant crossover with mechatronics skills utilized in oil and gas production transport and those used in today’s manufacturing, transport, and plastics industries.

The ShaleNET partnership has also helped Stark State identify challenges associated with aligning multiple degree pathways with multiple institutions. More pathways creates more administrative overhead with substitutions and transfers. It also erodes brand recognition by employers (too many degrees to choose from). There are currently five pathways in Stark State College's ShaleNET degree offerings. Rather than articulating all of these degree pathways, the ShaleNET Share project seeks to create a new single articulation pathway between partner colleges for a ShaleNET Measurement and Mechatronics Technician Associates of Applied Science (A.A.S.) Degree. This degree will be comprised of 40 credit hours of widely applicable general and technical skill courses already offered at each partner college such as chemistry, algebra, AC/DC circuits, blueprint reading, programmable logic controllers and industrial sensors. The ShaleNET Instrumentation and Measurement Technician Certificate, offered by Stark State, will add 20 credit hours of coursework in mechatronics, instrumentation, process control, measurement and custody transfer. These are skills that cross over between oil and gas, manufacturing, plastics and petrochemical industry jobs, and Stark State's Well Site Training Center provides hands-on technical learning experience for each.

This proposed ShaleNET Share project will use a 40/20 academic shared service agreement which will enable Ohio institutions to produce mechatronics and measurement technicians from multiple educational partners, and align them under a maintainable industry-recognized technical skill set. The 40/20 shared education approach that enables students to obtain an A.A.S. degree at their home institution by completing a 20-hour ShaleNET Instrumentation and Measurement Technician Certificate at Stark State College and 40 hours of core classes at partner institutions. The 40/20 approach mitigates the need for each institution to replicate the \$3.7 million ShaleNET Wellsite Training Lab currently housed at Stark State College, while increasing Ohio's capacity to produce the skilled oil and gas industry labor force of the future.

For the purposes of this pilot, the project team will focus its efforts in the Ohio Appalachian region where oil and gas production and workforce demand is most prevalent. Eastern Gateway Community College and Hocking College will collaborate with Stark State on this project. Letters of Commitment and a Partnership Agreement from the above two-year colleges are attached to this proposal. (see

Attachment A)

This initial partnership will focus on ShaleNET expansion at two Ohio technical colleges, however the project design holds promise for future articulations to other technical Appalachian Basin schools in Ohio, Pennsylvania, West Virginia and Kentucky to attract additional regional students. Once the degree pathways are ratified by Ohio Department of Higher Education and the Higher Learning Commission, new partners in Ohio can be added at any time during the initial project period. Stark State College has already completed preliminary articulation mapping for additional Ohio two-year colleges such as Belmont, Washington State, and Zane State.

The ShaleNET Share model also incorporates the value-add of bridging partnerships between high schools and postsecondary institutions and applies it to two-year college collaborations in Ohio. By aligning the degree pathways at several institutions, it will be easier to establish core College Credit Plus (CC+) offerings at regional high schools as the ShaleNET Share two-year college relationships mature. Expanding CC+ offerings in future phases of the project will have the added effect of further reducing postsecondary time-to-completion and overall degree cost.

During the 1990's, the national reform agenda of the American Association for Higher Education (AAHE) included secondary/postsecondary collaboration as a key focus.ⁱ These partnerships focused primarily on (a) secondary-postsecondary articulation and curriculum development; (b) professional development opportunities for faculty and academic support professionals to promote engagement in service and scholarship; and (c) early identification and intervention programs for educational enrichment and academic skill building.ⁱⁱ The project team will apply best practices identified in the research findings to a pilot two-year college education sharing model to promote the following innovations, shown in **Table I**, within Ohio's two-year college environment.

Table I: ShaleNET Share Project Innovations
• A replicable two-year college shared education model that promotes collaboration and efficiency.
• Expansion, standardization of and increased access to degree and certificate programs at non-affiliate two-year colleges in Ohio.
• Refinement of the ShaleNET curriculum to address the specific needs of Ohio's nascent oil and gas, manufacturing, and petrochemical industries.
• Implementation of a shared resource model that mitigates redundancy and promotes operational and fiscal efficiency.
• Implementation of a shared services model to enhance institutional capacity and achievement of student success and completion outcomes.
• Creation of a summer shared faculty arrangement where oil and gas teachers can impart/gain subject matter knowledge, and understanding about core concepts and pedagogical strategies.
• Reductions in student costs for two-year degree and certificate training.

Through this \$870,000 two-year project, the team seek to achieve the project goals shown in **Table II**. Student enrollment, completion and job placement outcomes generated through these goals and objectives will continue to be tracked for three-years following the end of the project period.

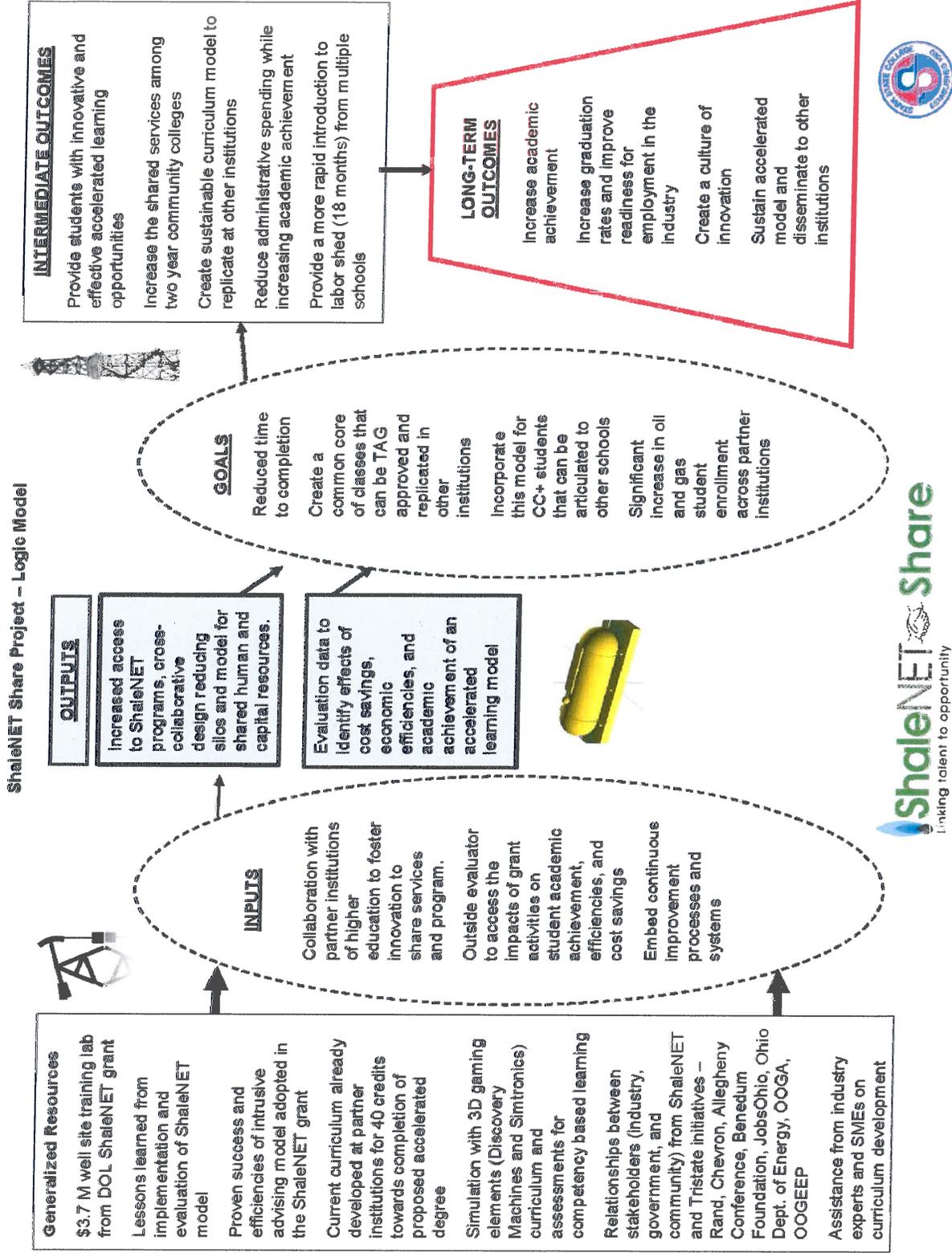
Table II: ShaleNET Share Project Goals and Objectives	
•	Development of an articulated 40/20 shared education program with up to five institutions enabling student cohorts to complete ShaleNET A.A.S. degrees on their home campus and a special ShaleNET Measurement Technician Certificate (with Labs) at Stark State College.
•	Access to Stark State College's ShaleNET Wellsite Training Lab for up to 80 students and seven faculty members annually as a shared resource for blended learning modalities.
•	Development of at least seven but not more than 20 Petroleum/Core Transfer Assurance Guide (TAG) courses supporting replication and expansion of the shared education model.
•	Development of an 18-month Petroleum Technology Measurement and Mechatronics Technician A.A.S. Degree.
•	Coordination of Financial Aid benefits/sharing to support three continuous semesters of education (Using Transient Student and Ohio College Opportunity Grant Rules).
•	Reduction in time-to-completion for students from 24 months to 18 months.
•	Creation of professional development opportunities for up to 14 Ohio postsecondary faculty.
•	Increases in Ohio's skilled oil and gas workforce through training opportunities for up to 108 students during the project period and an additional 160 in years three-through-five in the post-project period.
•	Creation of a replicable shared education model that be tested in other fields of study and regions across Ohio.

A logic model for the ShaleNET Share project is included below in **Chart I** on page six and a GANTT Chart of project activities to achieve goals and objectives is included in this proposal as **Attachment E**.

Traditional enrollment and funding models for two-year colleges make true institutional “reset” difficult. Historical practices have encouraged inter-segmental gaps, educational silos, and competition for students and service-area dominance among regional colleges. One disruptive approach foundational to the ShaleNET Share model is the creation of a platform for surfacing and incubating institutional and programmatic innovation through collaborative design, analysis and decision making. This project will pilot a new collaborative design to generate real, large-scale changes in institutional cultures and impact program offerings, support services and student success outcomes.

The education model proposed herein is critical to “resetting” the current two-year college paradigm in Ohio, because it promotes shared responsibility for academic achievement and collaboration through a series of partnership touchpoints and student competency goals. The most important of these touchpoints is the focused standardization of oil and gas education through the use of ShaleNET's industry recognized curriculum. Use of established ShaleNET curriculum creates a seamless student

Chart 1 – ShaleNET Share Logic Model



development path across institutions without proficiency gaps. Over time, collaborative exchanges among faculty about the curriculum and implementation practices will improve the program design and make it more globally acceptable while creating a vested interest in the new standardized pedagogies. The inclusion of blended teaching modalities (face-to-face, web4 and accelerated) reduces competency completion from 24-months to 18-months by enabling the student to take credit courses at multiple institutions simultaneously. Another important partnership touchpoint is the coordination of support services and information exchanges to promote early intervention and consistent allocation of services toward student success and completion. For the purposes of this project, shared services includes access to Stark State College's Career-Motivated Academic Persistence (CareerMAP) intake advising and student support model. CareerMAP is part of a shared responsibility success model that encourages students to establish realistic education and career paths early in their college experience. The use of software tools, like My Academic Plan, help link faculty, staff, programs and support services into an integrated and personal success team to help students set and achieve realistic college-to-career goals throughout their two-year college experience. Ultimately, CareerMAP and its associated tools help students navigate their college-to-career pathway and transition from institutional to self-reliant approaches (confidence building). Overall, the collaborative touchpoints in this project are designed to promote student success while building trust amongst regional two-year colleges. The project touchpoints also create structures through which student, faculty and staff experiences can be surfaced, articulated and incorporated into full-scale reforms and impact student success.

ShaleNET Share academic achievement outcomes will be based on student completion of performance ability goals and demonstration of competence relative to others. Performance ability goals will be embedded into the 60 credit-hour plus program curriculum (see **Attachment B**) and must be achieved as follows:

Partner Institution A.A.S. Courses (40 credit hours)

Students must complete up to 40 credit hours of core and technical study (13 courses) at their home institution. **Table III** shows courses that should be completed by students at their home institution. All mapped partner institutions (current and future), except Hocking College, currently have a full

complement of courses comparable to those currently required by Stark State as part of the ShaleNET curriculum. Stark State will share curriculum for Mechanical Drive Components (MST221) or Hydraulics and Pneumatics (MST134) and PLCs and Industrial Controls (EET227) with Hocking College to complete their course list. A course proficiency crosswalk between Stark State College and the partner institutions is included in this proposal as **Attachment C**.

Table III: Core/Technical Courses Taken at Partner Institutions		
• Electrical Circuits & Devices	• Petroleum Instrumentation	• Student Success Seminar
• PLCs and Industrial Controls	• Computer Applications for Professionals	• Introduction to the Petroleum Industry
• OSHA 40-Hour HAZWOPER	• Blueprint Reading or Basic AutoCAD	• Industrial Math or College Algebra
• Social & Behavioral Sciences or Arts and Humanities Elective	• Effective Speaking or Interpersonal Communication	• Mechanical Drive Components or Hydraulics & Pneumatics
• Introduction to Chemistry		

The above-referenced courses may be taken at any time during the student’s two-year college career with the exception of Electrical Circuits and Devices, and Computer Applications for Professionals or their equivalent, which must be taken prior to attending the summer boot-camp program at Stark State College.

Stark State College ShaleNET Measurement Technician Certificate / A.A.S. Completion (20 credit hours)

Students must complete a total of 20 credit hours with Stark State through blended learning Web4/Fast Track Friday and accelerated boot-camp modalities. Students will complete six credit hours (2 courses) through a Web4/Fast Track Friday blended approach and 14 credit hours (5 courses) through an accelerated oil and gas technical boot-camp program offered each summer. The courses shown in **Table IV** must be completed with Stark State to receive the ShaleNET Instrumentation and Measurement Technician Certificate and fulfill the articulated coursework requirements needed to receive the ShaleNET Measurement and Mechatronics Technician A.A.S degree from their home institution.

Table IV: Technical Courses Taken through Stark State College		
• Production Operations	• Petroleum Process Controls	• Corrosion Basics
• Gas Compression and Flow Dynamics *	• Introduction to Supervisory Control and Data Acquisition (SCADA)	• Measurement & Basic Pipeline Operations
• Petroleum Capstone Course*		
* Courses completed through Web4/Fast Track Friday blended learning format.		

Curriculum competencies will be used to assess prior learning and ensure quality and rigor for incumbent workers and military veterans in accordance with Ohio Department of Higher Education, "PLA with a Purpose" standards released in December, 2014.

The project addresses a broad industry need: feeder programs for technicians who have a working knowledge of mechatronics, instrumentation, and measurement. The ShaleNET technician certificate and A.A.S. degree represent a consolidation of mechatronics, instrumentation, and measurement core skills derived from three current Petroleum Technology offerings at SSC: Instrumentation and Electronics, Production Technician, and Pipeline Technician A.A.S degree programs. It is anticipated that the ShaleNET Measurement and Mechatronics Technician degree pathway will supplant these existing A.A.S. degrees, although one-year certificates in each will persist and are scalable to Bachelor's Degree programs in the future. This is necessary to keep articulation pathways as simple as possible for other institutions and College Credit Plus stakeholders.

Consolidation of the original ShaleNET Petroleum Technology degrees also aligns the project with recent Tristate Partnership Workgroup findings that recognize labor shed core skillset crossover in mechatronics, instrumentation and measurement as an important aspect of attracting economic development partners. We believe that the core set of competencies and skills to be included in the measurement certificate are relevant to many NAICS Advanced Industry sectors (see **Attachment D**).

Table V shows the student participation anticipated through implementation of this project design and shared teaching model.

Table V: Total Student Participation / Academic Achievement		
Year Two	Year Three	Year Five
48 Students Completed: 16 students from each institution (combined Yr. 1 and Yr. 2)	108 Students Completed: 20 additional students from each institution in Yr. 3	368 Students Completed: 80 students annually (capacity) plus two added institutions (Yrs. 4 and 5)

These estimates are based on the enrollment sharing agreements with the original three partners. The estimates will expand exponentially as additional partners are included (years three, four and five). Lab capacity issues will need to be addressed as part of long-term program expansion (for this design and replication into other fields of study). However, equipment sharing arrangements embedded in this design will reduce the overall capital expenditure needs towards expansion.

To track and report student success outcomes, course evaluations and grade point averages will be assessed through a standardized rubric of format set by the Ohio Department of Higher Education, the Project Team and the Stark State College's Office of Institutional Research and Assessment. Records of individual student demographics, graduation rates and retention rates will be collected and maintained by the Office of Institutional Research and Assessment. Focus groups and exit interviews will be determined by the Project Team based on similar standards of credibility and content. Project results will be communicated through a variety of methods at the local, regional and State levels. Public access to these results and sharing of the same will be made available as aggregate data only, without any personal identifying information about the participants. Publications and presentations of the results will be made through Stark State College, its partners and the Ohio Department of Higher Education. Information will be shared primarily in print and online formats. In the case of detailed student data, the sharing mechanism will be incorporated into the partner articulation, subcontract and ODHE grant award agreements. Data to be published or, alternatively, which has already been published, will be made available through de-identified copies of the raw data (if a researcher in the community requests such data) or computer software databases, which do not contain any personally identifying information (i.e. numeric codes assigned to individuals).

II. Project Rationale

The ShaleNET Share project design draws upon research done across the past 25 years around collaborative approaches that bridge K-12 to postsecondary and two-year to four-year colleges and universities. The partnership bridging mechanisms used in this research, as described at the bottom of page five, will be innovatively applied to an Ohio two-year college partnership model. The project team will apply these approaches across two-year colleges to explore how collaborative education impacts institutional efficiency, costs, student time-to-completion, college access and success, and matriculation into baccalaureate programsⁱⁱⁱ. The project design also draws upon research funded by the National Science Foundation on the effects of small-group learning in the STEM undergraduate environment. Use of the cohort enrollment model in this project seeks to replicate the achievement, persistence and attitudinal improvements outcomes realized through the previous work.^{iv}

The ShaleNET Share project also builds upon Stark State College's experience as a ShaleNET Affiliate Hub and supports innovative approaches for consideration by ShaleNET U.S. as part of a larger strategic business plan development process. The Project Team will draw upon three years of existing data gathered by partner colleges implementing the ShaleNET stackable model in Ohio, Pennsylvania (Penn College of technology, Westmoreland County Community College), Texas (Navarro College) and West Virginia (Pierpont). Preliminary assessment of the ShaleNET U.S. model indicates that curricular alignment is both the most important and most challenging aspect of collaborative education partnerships. However, it is also critical to removing barriers to cross-collaboration created by traditional education business models. **Table VI** below outlines benefits and challenges identified by ShaleNET Affiliates through the U.S. Department of Labor Trade Adjustment Assistance Community College and Career Training (TAACCCT) partnership.

Table VI: Project Benefits and Challenges in the Traditional Education Environment	
Benefits	
<ul style="list-style-type: none"> • Articulation agreements are the primary mode of transferring credits between colleges; • Achieving Industry recognition of degrees requires a common set of competencies in order to provide the right message; and • Laborshed needs should dictate the course content to maximize the relevance of degree programs. 	
Challenges	
<ul style="list-style-type: none"> • Course descriptions and outcomes at colleges rarely align completely, and course for course transfers are not as common as we would like; and • Individual colleges tend to have flagship programs that cater to regional industry partners. 	

As a ShaleNET Affiliate, Stark State College has worked collaboratively with other ShaleNET institutions to established common core competencies through a series of Tristate Shale Summit Workgroup meetings. The group also cross-walked course competencies/skillsets to careers in oil and gas, advanced manufacturing, mechatronics, and other energy industry sectors where they are commonly needed (see **Attachment D**). The Ohio Department of Higher Education approved Transfer Assurance Guide (TAG) course format is optimal for maximum transferability, and the single Measurement and Mechatronics Technician articulation pathway will allow project partners to streamline TAG approval work where it can have the greatest impact. Courses in the 40-hour core of classes are prime candidates for TAG.

With a basic assumption that all partner schools feed the 14 credit-hour summer boot-camp, the ShaleNET Share Model proposed herein will result in incremental enrollment increases toward a theoretical maximum throughput of 80 students per calendar year and increased oil and gas postsecondary education offerings/enrollment as shown in **Table V**. Long-term annual enrollment will be much higher as the collaboration matures, cyclical student enrollment reaches annual capacity/sustainability and capacity issues are addressed. Collaboration is critical to develop the feeder pathway to the summer boot-camp, reduce costs, capital equipment redundancies and increase enrollment through education sharing outcomes.

At maturity the 14 credit-hour summer boot-camp will be offered in a five-class rotation format, shown below in **Table VII**, to accommodate up to 80 students each summer. The rotation below enables students to receive 1,500 contact minutes for PET102 (2 credit hour, lecture) and 4,500 contact minutes (1,500 lecture and 3,000 Instructor-led Lab) over 49 class meetings in the course of ten weeks.

Monday		Tuesday		Wednesday		Thursday		Friday	
<i>Class</i>	<i>Time</i>	<i>Class</i>	<i>Time</i>	<i>Class</i>	<i>Time</i>	<i>Class</i>	<i>Time</i>	<i>Class</i>	<i>Time</i>
PET102	0800-0900	PET131	0800-0930	PET135	0800-0930	PET141	0800-0930	PET142	0800-0930
PET131	0900-1030	PET135	0930-1100	PET141	0930-1100	PET142	0930-1100	PET131	930-1100
PET135	1030-1200	LUNCH	1100-1200	Lunch	1100-1200	Lunch	1100-1200	Lunch	1100-1200
Lunch	1200-1300	PET141	1200-1330	PET142	1200-1330	PET102	1200-1300	PET135	1200-1330
PET141	1300-1430	PET142	1330-1500	PET102	1330-1430	PET131	1300-1430	PET141	1330-1500
PET142	1430-1600	PET102	1500-1600	PET131	1430-1600	PET135	1430-1600		

While reducing student time-to-completion from 24-months to 18-months, the project also generates significant student cost savings through the low tuition rates offered by the partnership. The median tuition for the project’s institutional partners is \$151.20. **Table VIII** below shows the 2015-16 tuition rates for each institution. When compared to the \$616.60 median full-time in-state undergraduate tuition and fee rates for Ohio’s four-year colleges, students can expect to save approximately \$465.40 per credit or \$27,924 for 60 credits of study per student (Five-year project enrollment: 368 x \$27,924=\$10,276,032).

Table VIII: Partner College Tuition Rates (per Credit-Hour)		
Stark State	Eastern Gateway	Hocking
\$153.60	\$117.00	\$183.00
<i>*Ohio Department of Higher Education. Data and Reports: Tuition and Financial Aid (Fall 2015)</i>		

Institutionally, the sharing of resources, equipment and facilities increases use of existing resources and mitigates the need for redundant assets. For example, replicating Stark State’s multi-million dollar Wellsite Training Center could be cost-prohibitive and inefficient. The Center will provide student and faculty access to fabrication equipment such as a metal lathe, end-mill, press-brake, shear, saws, punches, and MiG and TiG welding equipment. Faculty will also be able to check-out tooling and die equipment such as orifice plate, solar enclosure, and instrument enclosures for use at their home schools. Partner faculty and students can gain access to valuable technical hands-on lab training, Stark State can increase its cost-benefit outcomes for the Center and partners can promote a shared student services model that benefits everyone by sharing resources.

Overall, ShaleNET Share represents a new model of postsecondary education that promotes the best possible education for Ohio students while mitigating redundancy and promoting efficiency toward sustainability. It also creates new faculty development and curriculum standardization opportunities that have, until now, only been mildly successful. The Project Team seeks to realize the economic efficiency outcomes, shown in **Table IX**, through the ShaleNET Share pilot.

Table XI: ShaleNET Share Innovations in Postsecondary Education
A cross-functional adjunct pool comprised of full- and part-time faculty that can be deployed to staff the summer Boot-camp and develop partner college instructor knowledge. Use of an adjunct pool from various partner schools will facilitate collaboration and cross-pollination between programs. Relationships developed while collaborating in a mutually beneficial partnership are more persistent.
Efficient joint marketing of collaborative ShaleNET A.A.S. and certificate offerings to students, industry and other regional colleges, Career & Technical Centers and College Credit Plus programs.
Development of ShaleNET TAG courses/programs to promote transfer to other state institutions of higher learning as the courses on record and not as electives. Any crosswalks from workforce training or prior learning assessment will be able to be deployed at partner schools since the degree has been aligned in TAG or coursed by course articulations. This should lead to increased recruitment opportunities due to reduced time to completion and less student debt.
Implementation of blended course delivery modalities to enable access to coursework and laboratory equipment by the non-traditional and fully employed student. Create distance-learning opportunities to deliver ShaleNET programming through existing online learning management systems.
A Capstone Course that incorporates project-based learning elements and competencies spanning an array of skills including instrumentation, custody transfer, distribution, and regulatory aspects. The capstone course will parallel credit-based internship outcomes, providing an alternative pathway for students to do research and gain experiential learning toward program completion if internships are not readily available.

Existing petroleum lecture/lab courses adapted to a web-blended or web-essential modality consisting of online lecture with some required Well Site Training Center attendance. Additional modalities will allow greater access to ShaleNET programming not only in Appalachia but also to other shale plays within the country and a potential global market.

ShaleNET represents a stable long-term training pipeline for oil and gas and related industries in the Appalachian Basin. At Stark State alone, there are currently 85 declared petroleum majors and more than 120 unique individuals taking a class developed under the ShaleNET partnership. The college has identified a sustainability threshold of approximately 300 students for the ShaleNET programs. At that level, enrollment revenue should allow the ShaleNET Share program to self-support staff, instructors, equipment, laboratory consumables, and administrative overhead. The two-year 40/20 partnership will promote exponential enrollment increases at both Stark State and its partner institutions through expansion of ShaleNET A.A.S degree offerings into other areas of Ohio.

The project's sustainability plan seeks to ensure continuation of project goals, principles and efforts toward desired outcomes by achieving sustainable enrollment levels and identifying other local, state and federal funding sources to support project costs as needed. Stark State College and its partners have identified approximately \$158,758 in leveraged resources, including contribution from Stark State College, Chevron and Eastern Gateway Community College to cover partial costs for the Project Coordinator, advisors and scholarships. The Project Team will review the project design semi-annually to ensure that the goals of the project are consistent with current conditions and workforce development needs of the region.

III. Project Plan

Jean Barbato, ShaleNET Regional Hub Case Manager, will serve as the **ShaleNET Share Project Coordinator**. In this role, Jean will serve as the primary point of contact for the project. She will work with each applicant's home school advisor/faculty member to ensure that the progression of classes is consistent with completion metrics needed to transition students to the summer boot-camp. Jean will also work with partner colleges to establish the course delivery schedule each semester and coordinate scholarship opportunities. She will coordinate marketing and recruitment activities at SSC and other partner schools. Jean will also be responsible for cultivating long-term College Credit Plus relationships with high schools and career centers within the Utica play to enable future students to earn ShaleNET-

related college credit while in high school. Workshops will be developed for high school administrators and counselors to further their knowledge about the industry and career opportunities.

Dan Schweitzer, Coordinator for Oil and Gas programs at Stark State College, will serve as the primary point of contact for curriculum developers, adjunct and full-time faculty partners. He will coordinate the course content and delivery methods to ensure consistency and relevancy and serve as instructor as necessary. Dan will also interface with industry, partner colleges and government entities to build visibility and adoption of the ShaleNET Share A.A.S. degrees. Other duties include shepherding potential employers through the College Central Network account setup process and ensuring that job postings are disseminated to all program participants.

A **ShaleNET Share Curriculum Developer**, to be determined, will create and implement a new ShaleNET Capstone Course that incorporates project-based learning elements and competencies spanning an array of skills including instrumentation, custody transfer, distribution and regulatory aspects. The capstone course will parallel credit-based internship outcomes, providing an alternative pathway for students to do research and gain experiential learning toward program completion if internships are not readily available. The Curriculum Developer will adapt existing ShaleNET petroleum lecture/lab courses into web-blended or web-essential modality consisting of online lecture with some required Well Site Training Center attendance. This will impact eight existing courses. The additional modalities will promote greater access to ShaleNET programming not only in Appalachia but also to other shale plays within the country and a potential global market.

ShaleNET Share staff and faculty at partner institutions will collaborate with Stark State to develop TAG petroleum courses for approval through the Ohio Department of Higher Education. TAG designation will allow the courses to transfer to other Ohio institutions of higher learning as the courses on record and not as electives. The team will crosswalk standardized course objectives/competencies of the ShaleNET curriculum, allowing students to earn college credit while under the ShaleNET Share 40/20 model. The partnership will also collaboratively develop a shared services model and articulation that leverages the unique value-add of each institution. Competencies in programming at each college would have to be evaluated and cross-walked to ShaleNET.

IV. *Project Evaluation*

To conduct the required evaluation component of the grant, Stark State College and the ShaleNET Share consortium will work with a third-party evaluator, Social Policy Research Associates (SPR). SPR is well-positioned to conduct the evaluation as it is already the third-party evaluator for the current ShaleNET Trade Adjustment Assistance and Community College Career Training (TAACCCT) grant funded by the U.S. Department of Labor and thus already has a clear understanding of the ShaleNET model and its operation at Stark State. Since its founding in 1991, SPR has earned national recognition for its rigorous approach to evaluating higher education and vocational training programs for federal, state and local clients.

SPR proposes to conduct a formative and summative study of the ShaleNET Share consortium. The formative study will assess the implementation of the ShaleNET Share Program, surface operational and collaborative strengths and weaknesses of the project and report them back to ShaleNET Share at least annually so that the consortium can make mid-course corrections as needed. The summative study will focus on documenting and describing the key outcomes for the project, including participant academic achievement outcomes and reductions in funding and administrative expenditures. The specific outcomes the evaluation would measure for both evaluation components are described below.

Formative Measures

To assess the progress of implementation for the ShaleNET Share program, the formative portion of the evaluation will measure the following:

Overall Measures of Grant Implementation

- Completion of articulation agreements between the consortium colleges;
- Completion of curriculum and college/state approval of new courses;
- Enrollment by semester in the ShaleNET Share Program from each of the feeder colleges; and
- Extent of regular collaboration between consortium colleges, as measured by participation in consortium calls and meetings, and informal communication.

Interim Measures of Academic Achievement

- Completion of key academic milestones towards program completion and credential and degree attainment by student participants;

- Completion of the 10 week, 14 credit hour intensive summer semester;
- Completion of 30 credit hours; and
- Completion of the program's capstone course.

Summative Measures

To assess whether the ShaleNET Share Program has achieved its goals, the summative component of the evaluation will measure the following:

Academic Achievement by Participating Students

- Competencies achieved, as measured by course completion;
- Attainment of Petroleum Technology Measurement Career Enhancement Certificate or progress toward attainment as measured by credits earned and courses completed;
- Attainment of Associate of Science degree and/or progress toward attainment as measured by credits earned and courses completed; and
- Time to completion, as measured by time elapsed from enrollment to completion.

Expenditure Reductions

- Reductions in administrative expenditures at each of the feeder colleges to develop their own Petroleum Technology Measurement Program, as measured by documentation from Stark State College staff regarding the administrative time required to develop needed curriculum, purchase and maintain needed equipment, and develop required partnerships with industry partners; and
- Reductions in funding needed to run a Petroleum Technology Measurement Program, as measured by documentation from Stark State College staff regarding the funding needed to purchase required equipment.

Evaluation Process

In order to assess the ShaleNET Share Project's success on each of these measures, as well as to document key challenges and promising practices related to their attainment, we will collect both qualitative and quantitative data throughout the grant's period of performance. We will collect qualitative data through annual phone interviews with representatives from each consortium college and a site visit during the second year of the grant to Stark State College during the summer intensive semester. During this site visit we will carry out a variety of data collection activities, including observations of classroom/lab

sessions, focus groups with students and instructors, interviews with the program's career counselor, and project director. In addition, SPR will review relevant grant-related documents and other materials on an on-going basis.

We will also collect quantitative data on an ongoing basis through the grant's period of performance, including data on participant enrollment, academic achievement and expenditure data. To collect the necessary student achievement data, Stark State will develop data sharing agreements with each consortium college to have each college provide Stark State with data on project participants from each college's student information system. Stark State and SPR will then negotiate a data sharing agreement for Stark State to provide SPR with those data from feeder colleges as well as data from Stark State's own data system. SPR will also work with the Stark State and other consortium members to create a template for the consortium to continue reporting these data to ODHE in the three years after the completion of the grant. To collect the expenditure data, SPR will work with relevant staff from Stark State College during the second year of the grant to obtain documentation of project development costs.

To provide the results from both the formative and summative evaluation components to both the ShaleNET Share Consortium and ODHE, SPR will produce both an interim report at the approximate midpoint of the grant and a final report just before the grant's conclusion. SPR will also present the results from both reports to consortium and ODHE staff members via webinar shortly after submission of each report.

Evaluation Implementation and Timeline

For purposes of managing this project evaluation, SPR has divided the project into six tasks and various subtasks as shown below. These are displayed graphically in **Chart II** on page 22 of this proposal.

- Task 1: Finalize research design. This task begins with a start-up meeting held shortly after grant award to refine the key research questions, and data collection and analysis tasks. As part of this task, we will also develop qualitative data collection instruments and gain IRB approval from Stark State.
- Task 2: Qualitative data collection. This task includes phone interviews with representatives from each college and a site visit to Stark State. The first round of phone interviews will take place during

the second half of 2016, while the second round will take place in late 2017. The site visit will take place during the second intensive summer semester in the summer of 2017.

- Task 3: Quantitative data collection. SPR will negotiate a data sharing agreement regarding student educational data with Stark State shortly after the grant's award and will then arrange to collect such data on a regular basis throughout the grant. SPR will collect expenditure data during the fall of 2017.
- Task 4: Interim report. SPR will produce an Evaluation Interim Report in the spring 2017 with a telephone briefing to the consortium following the report's submission.
- Task 5: Final Report. SPR will produce a Final Evaluation Report in the spring 2018 with a telephone briefing to the consortium just prior to finalization of the report.
- Task 6: Project Management. SPRs will conduct activities related to the management of the evaluation on an ongoing basis throughout the period of performance, including regular communication with Stark State via phone calls and progress reports.

Evaluation Team Qualifications

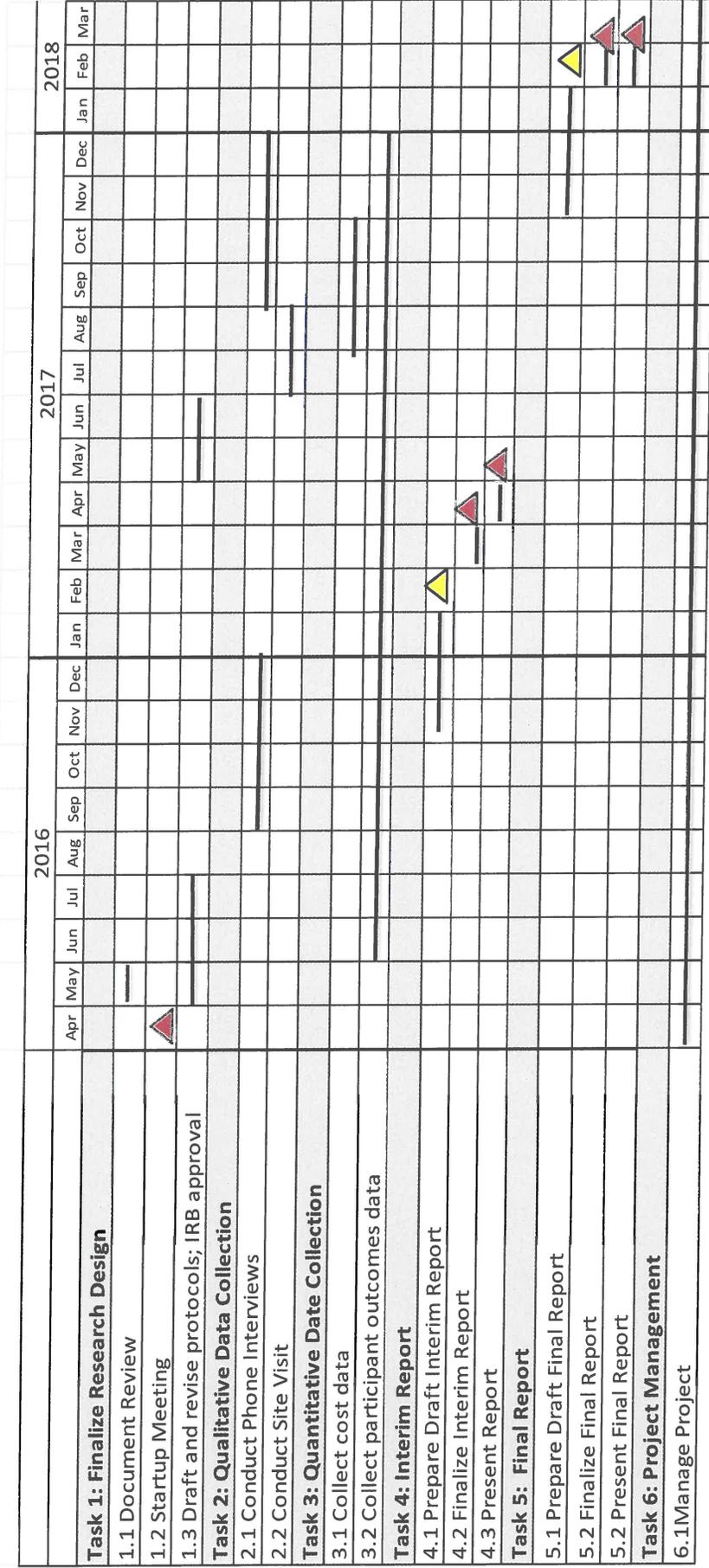
The evaluation team will be comprised of four staff members from SPR. Kate Dunham will serve as the senior advisor, Deanna Khemani will serve as the project manager and lead the qualitative data collection and analysis efforts, Ms. Leela Hebbar will lead the evaluation's quantitative data collection (participant outcomes and cost data) and analysis components. These three lead staff will be assisted by an SPR project assistant. Below is a description of the qualifications of the evaluation team's three lead staff members.

Ms. Kate Dunham (M.P.P., Public Policy, University of California at Berkeley) is a Senior Associate and the Director of the Workforce Development and Human Services Research and Evaluation Division at SPR. As the Division Director, Ms. Dunham leads all of the company's evaluations for TAACCCT-funded grants. She is one of SPR's senior researchers with more than 15 years of experience evaluating workforce development programs, and has served as project director on a number of community college projects, including the impact Evaluation of the ShaleNET TAACCCT Grant and USDOL's Technology-Based Learning Grants, which has helped her gain valuable experience leading IRB processes.

Ms. Deanna Khemani (M.A. Political Science, Northeastern University), Senior Associate, will serve as the project manager and lead analyst for the project. Ms. Khemani has over 15 years of experience working on state-specific education and workforce development evaluations, including her work as a site visitor for both the Evaluation of the Michigan Coalition for Advanced Manufacturing (M-CAM) TAACCCT Grant and Third Party Evaluation of ShaleNET U.S. TAACCCT Grant, where she served as the sole data collection expert for Stark State College. As part of her role under these evaluations, she has been responsible for conducting site-visit data collection, preparing qualitative analysis, and developing data sharing agreements with state agencies.

Ms. Leela Hebbar (Ph.D., Urban Planning and Policy Development, Rutgers University) is a Senior Associate at SPR. Ms. Hebbar has over 10 years of experience conducting research and evaluation to inform decision making in workforce development and higher education settings. Recently, Ms. Hebbar was the lead researcher in the evaluation of San Mateo County's Workforce Innovation Fund Grant, which included outcome studies of pilot programs designed to help English learners advance on their career pathways. She is currently the lead analyst for the quantitative data related to the Third Party Evaluation of ShaleNET U.S. TAACCCT Grant, from which the ShaleNET Share project builds its curriculum.

Chart II – Evaluation GANTT Chart



V. **Budget Narrative**

Budget Narrative: ShaleNET Share Project			
	Description	ODHE Funds	Leveraged Funds
Equipment			
FlowBoss Mechatronics Trainer (Eastern Gateway and Hocking College)	The FlowBoss Mechatronics Trainer is a packaged unit that includes a local flow computer, Orifice Plates, Resistive Thermal Devices, Turbine Metering, Multi-variable Sensors and Tubing. This equipment will enable partner colleges to teach American Gas Alliance 3 and 7 Flow Metering and Custody Transfer. Stark State will provide partner colleges with four units each (8 total) to advance their PLC, Sensor, Instrumentation and Mechatronics offerings to align proficiencies with ShaleNET requirements. Each unit is priced at \$5,000 each.	\$40,000	
Open Enterprise Licenses (Stark State College)	The Enterprise Licenses support Web4 access to the Oil and Gas Training Lab at Partner Institutions. The seat licenses will be managed by Stark State for the use of partner institutions. The project seeks to secure 16 concurrent-use seat licenses at \$1,200 per license	\$19,200	
Open Enterprise Distributed SCADA system (Stark State College)	The project will purchase two Open Enterprise systems to enable partner institutions to run simulated and actual process control environments through a remote terminal. This units will talk to lab media runs and instrumentation to monitor and maintain actual PLC processes. Each unit is priced at \$25,484 to be covered by ODHE funds	\$50,968	
Personnel			
Project Coordinator (Stark State College)	Jean Barbato will serve as the ShaleNET Share Project Coordinator (see job description on pages 14-15 of this proposal). As Project Coordinator, Ms. Barbato will be paid a base salary of \$43,068 in Year-one and \$44,145 in Year-two (includes for a 2.5% cost of living increase). Fringe benefits of 16 percent for Workers Compensation (.00397%), FICA (.0145%), Retirement (.14%). Health and dental benefits will also be provided at 85% of cost or \$17,383.76 in year one and \$19,122 in year two to account for annual insurance rate increases. Project Coordinator salary costs will be split between ODHE grant funds and other outside local funds.	\$100,162	\$34,377

Coordinator of Oil and Gas Programs <i>(Stark State College)</i>	Dan Schweitzer currently serves as the College's Coordinator for Oil and Gas programs. Mr. Schweitzer will assist Ms. Barbato in implementing the ShaleNET Share project (see page 15). The College will allocated 50 percent of Mr. Schweitzer's base salary, fringe and health benefit costs (valued at \$87,100 annually) to support the project in years one and two.		\$87,100
ShaleNET Share Advisors <i>(Eastern Gateway CC and Hocking College)</i>	ShaleNET Share Advisors are oil and gas faculty that will work collaboratively with Stark State to develop TAG course modules and implement the 40/20 shared education model. They will serve as the primary point of contact for the Project Coordinator. The project team has allocated \$15K per year for each institution to cover 20% of faculty time and effort to serve as Advisors. Eastern Gateway has included \$9,307 in administrative services as leveraged funds for this project.	\$60,000	\$9,307
Adjunct Instructors - Summer Intensive Program <i>(Stark State College)</i>	Five adjunct instructors (x 2 summers) from partner institutions and be provided supplemental contracts by Stark State to teach oil and gas technical courses during the 10-week summer intensive program. Four of the instructors will be paid the SSC adjunct rate of \$3,198 to teach four contact hour courses and one will be paid \$1,648 to teach a two contact hour course. The Project team will apply adjunct costs to the grant during years one and two while the project is under development.	\$28,880	
Facilities			
Supplies			
Purchased Services			
Curriculum Developer (To Be Determined) <i>(All Institutions)</i>	This contracted service provider from outside Stark State will work with the project team/partners to establish TAG course curriculum for submission to ODHE and HLC. The project will subcontract the work at a rate \$40 per hour for a total of 875 hours (110 days) of work. The work may be divided across several industry subject-matter experts with education experience.	\$35,000	
Summer Program Housing <i>(Malone University)</i>	Because of the timing of the 24-month project period and the implementation of summer sessions, Stark State College anticipates being able to serve 24 students in the year-two summer intensive. Malone University has agreed to provide housing	\$62,400	

	and meals (Mon-Thu) for ten-weeks (40 nights per student) at a rate of \$20 per student/day (rooms) and \$12.50 per student/day (meals) or \$32.50 per student/day.		
External Evaluator <i>(Social Policy Research Associates (SPR))</i>	The Project Team will engage SPR to prepare and provide annual evaluation services. SPR brings special value-add to the project because they have also served as the evaluator for the ShaleNET U.S. project funded by DOL and have experience with the ShaleNET outcomes and corrective actions. The evaluator will work with the project team to develop annual reports, assessment and corrective action plans.	\$50,000	
Expanded Network Bandwidth for Wellsite Training Center	The expanded up and downstream bandwidth requested herein supports partner college access to the Wellsite Training Center systems and sustain increased external demand on our systems from partners. The expanded bandwidth costs \$400 per month for the 24-month project period.	\$9,600	
Travel			
Outreach (Mileage)	Stark State College, through outside local funds, will support a portion of travel costs for this project as leveraged funds. A total of \$2,000 will be set aside in the grant funds to support outreach to existing partners and other Appalachian Basin College. Mileage will be paid at the Federal rate of 0.55 cents per mile.	\$2,000	\$1,267
Building Improvements			
Other (Describe)			
Scholarships <i>(All Institutions)</i>	The Project Team would offer \$1,500 scholarships to the 48 anticipated students to be served in years one and two of the project.	\$72,000	
Print Materials	The project will provides on-campus ShaleNET-related materials to partner institutions. This budget sets aside \$5,000 per institution for these materials	\$10,000	
Marketing <i>(All Institutions)</i>	The ShaleNET Share partners will work collaboratively with the Stark State College Marketing Department to develop and implement a three-county marketing plan. The Colleges Director of Marketing needs to include print (\$15K), outdoor (\$20K), radio (\$18K) and digital/online (\$8K) per year to saturate the three market areas. These costs will be paid through the ODHE grant funds in the first two years with a supplemental \$13,500 in leveraged funds	\$122,000	\$13,500

	to cover any costs for use of outside firms to develop marketing materials.		
SUBTOTAL DIRECT COSTS		\$662,210	\$145,551
Indirect Costs	Indirect costs will be charged to the ODHE grant funds at eight percent of direct costs. Stark State College has a negotiated Federal Indirect Cost Rate of 48% of Salary and Fringe. The difference between the two rates will be included in this proposal as leveraged funds.	\$52,977	\$13,207
TOTAL DIRECT/INDIRECT		\$715,187	\$158,758



SHALENET SHARE CONSORTIUM AGREEMENT

For the purposes of this project, an education consortium is an association of two or more school districts, school buildings, community schools or STEM schools pooling resources to share human and material assets and link academic and administrative resources with the objective of participating in the development and execution of a ShaleNET Share grant application to the Ohio Department of Higher Education – Education Innovation Program. A grant application submitted by an education consortium uses the shared resources of its members to achieve the goals of the grant application through cooperative purchasing, course sharing, professional development, information technology integration and/or faculty and staff networking. Unlike a partnership, each member of an education consortium is responsible for ensuring the ShaleNET Share grant application is developed and executed according to the terms of the grant agreement with the Ohio Department of Higher Education. Like individual grant applicants, an education consortium can partner with educational stakeholder(s) via a Partnership Agreement to accomplish the goals of the grant application.

In order to ensure the effective implementation of the ShaleNET Share project throughout the Appalachian region and Utica Shale Play, each education consortium must identify its members and attach a description of their respective roles and responsibilities. Additionally, a separate description regarding the nature of the partnership must be submitted for any educational stakeholder(s) partnering with the education consortium.

Each member of the education consortium is responsible for the following assurances:

1. Be knowledgeable about the consortium’s ShaleNET Share grant proposal and application, including advocacy of the ShaleNET Share program.
2. Sign and accept this Education Innovation Fund Program Grant Assurances.
3. Maintain familiarity with the consortium’s members and services to enhance the proposal, including specific goals and practices.
4. Demonstrate a commitment to clear roles and responsibilities of each consortium member as it relates to the grant proposal and application.
5. Sustain consistent communication among consortium members and stakeholders with a shared vision of the goals of the grant proposal. This includes participating in regularly scheduled meetings for project management and identifying areas for improvement.
6. Ensure consortium members have appropriate access to data for purposes of grant program improvement and evaluation in accordance with state and federal law.
7. Assist in the development of a clear project management plan to sustain the grant project over time.

Education Consortium Signatures

	<u>Lead Applicant/Consortium Member</u>
Name:	<u>Para M. Jones, Ph.D.</u>
Title:	<u>President</u>
Name of Institution:	<u>Stark State College</u>
IRN#:	<u>063420</u>
Address:	<u>6200 Frank Avenue NW</u>
City:	<u>North Canton</u>
State:	<u>OH</u>
Zip:	<u>44720</u>
Phone:	<u>330-494-6170, ext. 4259</u>
Email:	<u>pjones@starkstate.edu</u>
Signature:	<u><i>Para M Jones</i></u>
Date:	<u>3/7/16</u>

	<u>Consortium Member</u>
Name:	<u>Jimmie Bruce, Ed.D.</u>
Title:	<u>President</u>
Name of Institution:	<u>Eastern Gateway Comm. College</u>
IRN#:	<u>063453</u>
Address:	<u>4000 Sunset Boulevard</u>
City:	<u>Steubenville</u>
State:	<u>OH</u>
Zip:	<u>43952</u>
Phone:	<u>740-266-0801</u>
Email:	<u>jbruce@egcc.edu</u>
Signature:	<u><i>Jimmie Bruce</i></u>
Date:	<u>3/7/16</u>

Attachment A: Partner Letters of Commitment



Consortium Member

Name: Betty Young, Ph.D., JD, LL.M
Title: President
Name of Institution: Hocking College
IRN#: 063339
Address: 3301 Hocking Parkway
City: Nelsonville
State: OH
Zip: 45764
Phone: 740-753-7004
Email: youngb@hocking.edu
Signature: 
Date: 3/1/14



March 9, 2016

Mr. John Magill
Assistant Deputy Chancellor, Economic Advancement
Ohio Board of Regents
25 South Front Street
Columbus, OH 43215

Dear Chancellor Magill:

Stark State College is pleased to submit the attached proposal for funding consideration under the Ohio Department of Higher Education's Education Innovation Program. Through this project, Stark State will pilot the ShaleNET Share collaborative education project with Eastern Gateway Community College, Hocking College and others. This project will enable Ohio two-year colleges to offer ShaleNET oil and gas education through a program sharing arrangement with Stark State. The College firmly believes that innovative approaches to education are fundamental to Ohio's efforts to create educational excellence and economic efficiencies that promoting student access and success. Through this project, Stark State will lead the development and implementation of a replicable education model that promotes curriculum alignment, creation of TAG degree programs, sharing of cost-prohibitive equipment and facility resource, reductions in time-to-completion and enhancement of education offerings across Ohio.

Stark State College has served as a ShaleNET Affiliate Hub since 2013. As an affiliate, the College has invested more than \$3.7 million to develop oil and gas training programs and state-of-the-art lab facilities. Through this project, Stark State will work collaboratively with other two-year colleges in Ohio to pilot a 40/20 shared education program where students will complete core curriculum at their home institution and 20 credit hours of ShaleNET oil and gas education via web-4 and "Friday Fast Track" on-site education at Stark State College's ShaleNET Wellsite Training Center. Upon completion of the program, students will receive an A.A.S. degree from their home institution and a ShaleNET Petroleum Technology Measurement Certificate from Stark State College. Stark State and its partners will work collaboratively to align curriculum and establish articulation agreements that supports the shared education arrangement. For the long term, the College will work with the collaborative to design a TAG courses/Petroleum Technology Degree programs in Ohio. The ShaleNET Share concept promotes increased enrollment through expanded education program offerings; efficient use of student support, equipment and other capital resources; and standardization of oil and gas education in Ohio. To support this project, the College will commit in-kind leveraged resources of \$87,000 representing ten percent of the College's Oil and Gas Director's time for project oversight and other industry-awarded funds to offset the cost of the Project Coordinator.

A dedicated team of College administrators and faculty have already begun to collaborate on the training component design and look forward to working with you and your team on this important project should the Ohio Department of Higher Education select this proposal for funding. Please let me know if you have any questions regarding this letter or the information contained herein.

Sincerely,

Para M. Jones, Ph.D.
President

Attachment A: Partner Letters of Commitment



Jefferson County Campus

4000 Sunset Boulevard
Steubenville, OH 43952

740.264.5591
800.68.COLLEGE
www.egcc.edu

March 9, 2016

Dr. Para Jones
President
Stark State College
6200 Frank Avenue NW, Suite S203
North Canton, OH 44720

Dear Dr. Jones:

Eastern Gateway Community College (EGCC) is pleased to submit this letter of commitment to partner with Stark State on a collaborative education project that would enable ShaleNET-related oil and gas programs to be offered at Ohio colleges through a program sharing arrangement. The College firmly believes that innovative approaches to education are fundamental to Ohio's efforts to create educational excellence and economic efficiencies that promoting student access and success. Through this collaboration, EGCC will participate in the development and implementation of a replicable education model that promotes curriculum alignment, creation of TAG degree programs, sharing of cost-prohibitive equipment and facility resource, reductions in time-to-completion and enhancement of education offerings across Ohio.

Eastern Gateway currently offers a number of fields of study related to energy and engineering, including but not limited to an Oil & Gas Industry Operations & Maintenance Certificate, an Associate Degree in Natural Gas Operations, Programmable Logistics Controller Certificate, an Associate Degree and Certificate in Welding, an Associate of Technical Study Degree in Industrial/Manufacturing Trades Technology, an Associate Degree in Advance Machining and an Associate Degree in Mechanical Engineering Technologies. Through this project, the College will work collaboratively with Stark State College to develop a 40/20 shared education program where students can complete core curriculum at EGCC and 20 credit hours of ShaleNET oil and gas education with Stark State College through a blended learning format. Upon completion of the program, students will receive an Associate Degree from EGCC and a ShaleNET Petroleum Technology Measurement Certificate from Stark State College. Eastern Gateway will work with Stark State to align curriculum and establish an articulation agreement that supports the shared education arrangement. For the long term, the College will work with the collaborative to design TAG courses/Petroleum Technology Degree programs in Ohio. The ShaleNET Share concept promotes increased usage of existing oil and gas laboratories and alleviates the need for each school to construct a \$3.5 million ShaleNET oil and gas training lab. As a collaborative partner, Eastern Gateway will provide in-kind time and effort in the amount of \$9,307.57, representing 8% percent of salary and fringe costs for the Vice President for Administrative Services.

A dedicated team of College administrators and faculty have already begun to collaborate on the training design and look forward to working with you and your team on this important project should the Ohio Department of Higher Education select this proposal for funding. Please let me know if you have any questions regarding this letter or the information contained herein.

Sincerely,

A handwritten signature in black ink, appearing to read "Jimmie Bruce".

Jimmie Bruce, Ed. D.
President

cc: John Magill, Ohio Department of Higher Education

Attachment A: Partner Letters of Commitment



March 1, 2016

L. Caroline Maloney
Strategic Grants Development Officer
Stark State College
6200 Frank Avenue NW, Suite S306-H
North Canton, OH 44720

Dear Caroline:

Malone University is pleased to offer summer housing (last two weeks of May, June, and July) 2016 and 2017 for the ten-week intensive summer oil and gas program that you will be offering at Stark State College. The first two weeks of August are not available for housing.

Malone University will provide air conditioned housing to accommodate sixteen (16) students in single sleeping rooms with a semi private restroom facility (two people share a restroom) for \$100.00 per week per person. Each room consists of a twin bed, desk, chair, dresser, and closet. All residence hall housing has free wireless internet, cable, laundry facilities, and parking.

Malone University is looking forward to collaborating with Stark State College to provide housing for the intensive summer oil and gas program for 2016 and 2017.

Sincerely,

A handwritten signature in black ink, appearing to read 'Cindy Lundin', is written over a light blue horizontal line.

Cindy Lundin
Events Coordinator
Malone University

Attachment B: Proposed Petroleum Technology Instrumentation and Measurement Technician A.A.S Curriculum Sheet

 	<p>ASSOCIATE OF APPLIED SCIENCE Proposed PETROLEUM TECHNOLOGY MEASUREMENT & MECHATRONICS TECHNICIAN MAJOR</p> <p><i>The catalog in force is assigned to students based on the academic year they first applied to the college, and changes only when students change their major or request the change in writing.</i></p>	<p>Proposed Effective Summer 20</p>
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Engineering Technologies Division

Oil and Gas Technology Department

TECHNICAL Course Number	Course Title	Credits	Pre- and Co-Requisites	Completed Sem./Year
EST230	Electrical Circuits and Devices [^]	4	[(MTH093 and MTH094)+ or Proficiency] or MTH107	
ARI.234	Gas Compression and Flow Dynamics	3		
PET132	Petroleum Instrumentation	3	EST230 and (CHM101 or ARI.234)	
MST221	Mechanical Drive Component	3		
PETXXX	Petroleum Process Controls	3		
EET227	PLCs and Industrial Controls I	3	EET120 or EST230	
PET102	Introduction to Supervisory Control and Data Acquisition (SCADA)	2		
PET131	Corrosion Basics	3		
PET135	Measurement & Basic Pipeline Operations	3		
PET141	Production Operations	3		
PET2XX	Petroleum Capstone Course	3		
Total		33		
NON-TECH Course Number	Course Title	Credits	Pre- and Co-Requisites	Completed Sem./Year
SSC101	Student Success Seminar ^{^^}	1	<i>Take first semester</i>	
PET101	Introduction to the Petroleum Industry	3		
ITD122	Computer Applications for Professionals [^]	3	ITD100 or Proficiency	
CHM101	Introduction to Chemistry [^] [^]	4	(MTH093 and MTH094) ⁺⁺ or Proficiency	
MTH107 or MTH125	Industrial Math or College Algebra [^] ^Ω	3 Or 4	(MTH091 and MTH092) ⁺⁺ or (MTH093 and MTH094) ⁺⁺ or Proficiency	
ENG124	College Composition [^]	3	ENG011 or Proficiency	
ENV221	OSHA 40-Hour HAZWOPER	2		
COM121 or COM122	Effective Speaking or Interpersonal Communication	3		
MST121 or DET125	Blueprint Reading or Basic AutoCAD	2 or 3		
	<i>Select one (1) Social & Behavioral Sciences or Arts & Humanities Elective from the list below</i>	3	<i>Check for prerequisites</i>	
Total		27 or 28or29		
TOTAL CREDIT HOURS		60 or 61or62		

[^]Based on SSC placement scores

^{^^}To promote student success, this course should be taken in the first semester

⁺Minimum grade of "B" required

⁺⁺Minimum grade of "C" required

^ΩMTH125 should be taken by students planning to transfer to a four-year institution

Attachment B: Proposed Petroleum Technology Instrumentation and Measurement Technician A.A.S Curriculum Sheet

^ Because of strong emphasis on science in this major, applicants must have successfully completed Chemistry and Biology in high school. Students who did not complete the courses in high school, and those who prefer to refresh their knowledge of the material, should complete the listed pre-requisites.

*Social & Behavioral Sciences or Arts & Humanities electives: BUS122, BUS221, BUS222, PSC121, PSY121, PSY122, PSY123, PSY124, PSY220, PSY221, SOC121, SOC122, SOC123, SOC221, SOC225, ENG233, ENG234, ENG236, ENG237, HIS121, HIS122, HIS221, HIS222, PHI122 (recommended)

[Keywords]	ASSOCIATE OF APPLIED SCIENCE Proposed PETROLEUM TECHNOLOGY MEASUREMENT & MECHATRONICS TECHNICIAN MAJOR	[Category]
Proposed Effective Summer 20[status]		

FULL-TIME STUDENT ADVISING NOTES

Academic Advising

Students should make an appointment to see their advisor before registering for classes each semester. They should have prepared a completed registration form, including courses they wish to take, prior to this meeting.

Course Sequence

The semester-by-semester listing below provides the normal scheduling option for full-time associate degree students who plan to finish in two years.

<u>First Semester</u>		<u>Credit Hours</u>	<u>Pre- and Co-requisites</u>
SSC101	Student Success Seminar^^	1	Take first semester
ENG124	College Composition^	3	ENG011 or Proficiency
PET101	Introduction to the Petroleum Industry	3	
ARL234	Gas Compression and Flow Dynamics	3	
BST230	Electrical Circuits and Devices^	4	[(MTH093 and MTH094)+ or Proficiency] or MTH107
ITD122	Computer Applications for Professionals^	3	ITD100 or Proficiency
		17	
<u>Second Semester</u>			
	<u>10 Week Summer Intensive</u>		
PET102	Introduction to Supervisory Control and Data Acquisition (SCADA)	2	
PET131	Corrosion Basics	3	
PET135	Measurement & Basic Pipeline Operations	3	
PET141	Production Operations	3	
PETXXX	Petroleum Process Controls	<u>3</u>	
		14	
<u>Third Semester</u>			
EET227	PLCs and Industrial Controls I	3	EET120 or EST230
PET132	Petroleum Instrumentation	3	EST230 and (CHM101 or ARL234)
MST221	Mechanical Drive Components	3	
MST121 or DET125	Blueprint Reading or Basic AutoCAD	2 or 3	ITD100 or Proficiency
PET2XX	Petroleum Capstone Course	<u>3</u>	ENG011 or Proficiency
		14 or 15	
<u>Fourth Semester</u>			
MTH107	Industrial Math	3	(MTH091 and MTH092)++
or	or	Or	or
MTH125	College Algebra^Ω	4	(MTH093 and MTH094)++ or Proficiency
CIEM101	Introduction to Chemistry^▲	4	(MTH093 and MTH094)++ or Proficiency
COM121 or COM122	Effective Speaking or Interpersonal Communication	3	
ENV221	OSHA 40-Hour HAZWOPER	2	
	Select one (1) Social & Behavioral Sciences or Arts & Humanities Elective from the list below	<u>3</u>	Check for prerequisites
	TOTAL CREDITS	16 or 17 60 or 61 or 62	

Attachment C: ShaleNET Course Crosswalk for Partner Institutions

		ShaleNET Share					
		Partner Course Crosswalk			Partner College Course Equivalent		
		Petroleum Technology Measurement A.A.S.					
Stark State College Course Number	Course Title	Credits	Belmont College	Eastern Gateway Community College	Hocking College	Washington State Community College	Zane State College
Technical Courses							
EST230	Electrical Circuits & Devices	4	EIE1101	ELE101	ISE2210	ELET1110	EEET1100
ARL234	Gas Compression and Flow Dynamics	3	NA	NA	NA	NA	NA
PET132	Petroleum Instrumentation	3	EIE2315	ELE207	ISE2210	MECH2150	EEET2210
MST221 or MST134	Mechanical Drive Components or Hydraulics & Pneumatics	3	ECE1160	MCH102	NA	MECH2230	MECH2500
PETXXX*	Petroleum Process Controls	3	NA	NA	NA	NA	NA
EET227	PLCs and Industrial Controls	3	EIE2210	ELE214	NA	ELET2410	EEET2510
PET102	Introduction to Supervisory Control and Data Acquisition (SCADA)	2	NA	NA	NA	NA	NA
PET131	Corrosion Basics	3	NA	NA	NA	NA	NA
PET135	Measurement & Basic Pipeline Operations	3	NA	NA	NA	NA	NA
PET141	Production Operations	3	NA	NA	NA	NA	NA
PET2XX*	Petroleum Capstone Course	3	NA	NA	NA	NA	NA
TECHNICAL CREDITS SUBTOTAL		33					

Attachment C: ShaleNET Course Crosswalk for Partner Institutions

Non-Technical Courses									
SSC101	Student Success Seminar	1	FYE1110	CSS106		GS1000	PERS1003		FYEX1010
PET101	Introduction to the Petroleum Industry	3	NGT1101	NGT101		PET1101	INDT1020		OGET1010
ITD122	Computer Applications for Professionals	3	CPT1100	GSC107		MICS1141	BUSM1600		BMCA1050
CHM101	Introduction to Chemistry	4	CHM1112	CHM101		CHEM1101	CHEM1200		CHEM1010
MTH107 or MTH125	Industrial Math or College Algebra	3 4	MAT1125 or MAT1130	MTH095 or MTH120		MATH1113	MATH1104 or MATH2130		MATH1240
ENV221	OSHA 40-Hour HAZWOPER	2	FST1116	NGT131		GEN2225	INDT1210		EVNS2550
COM121 or COM122	Effective Speaking or Interpersonal Communication	3	COM1110 or COM1115	COM101		COMM1130	SPCH1510 or SPCH2060		COMM2610 MECH2650 or other
MST121 or DET125	Blueprint Reading or Basic AutoCAD	2 3	ECE1120	DES115		DD1114	DRFT1410		
Electives	Social & Behavioral Sciences or Arts and Humanities Elective	3							
	NON-TECHNICAL CREDITS SUBTOTAL	24 or 26							
	*Courses to be developed by Stark State College for Petroleum Technology Measurement Certificate.								
	☐ = ShaleNET courses taught by Stark State College as part of Petroleum Technology Measurement Certificate.								
	Core requirement in all college curriculum.								

Attachment D: Industry Sector Crosswalk of Oil and Gas Skills and Competencies

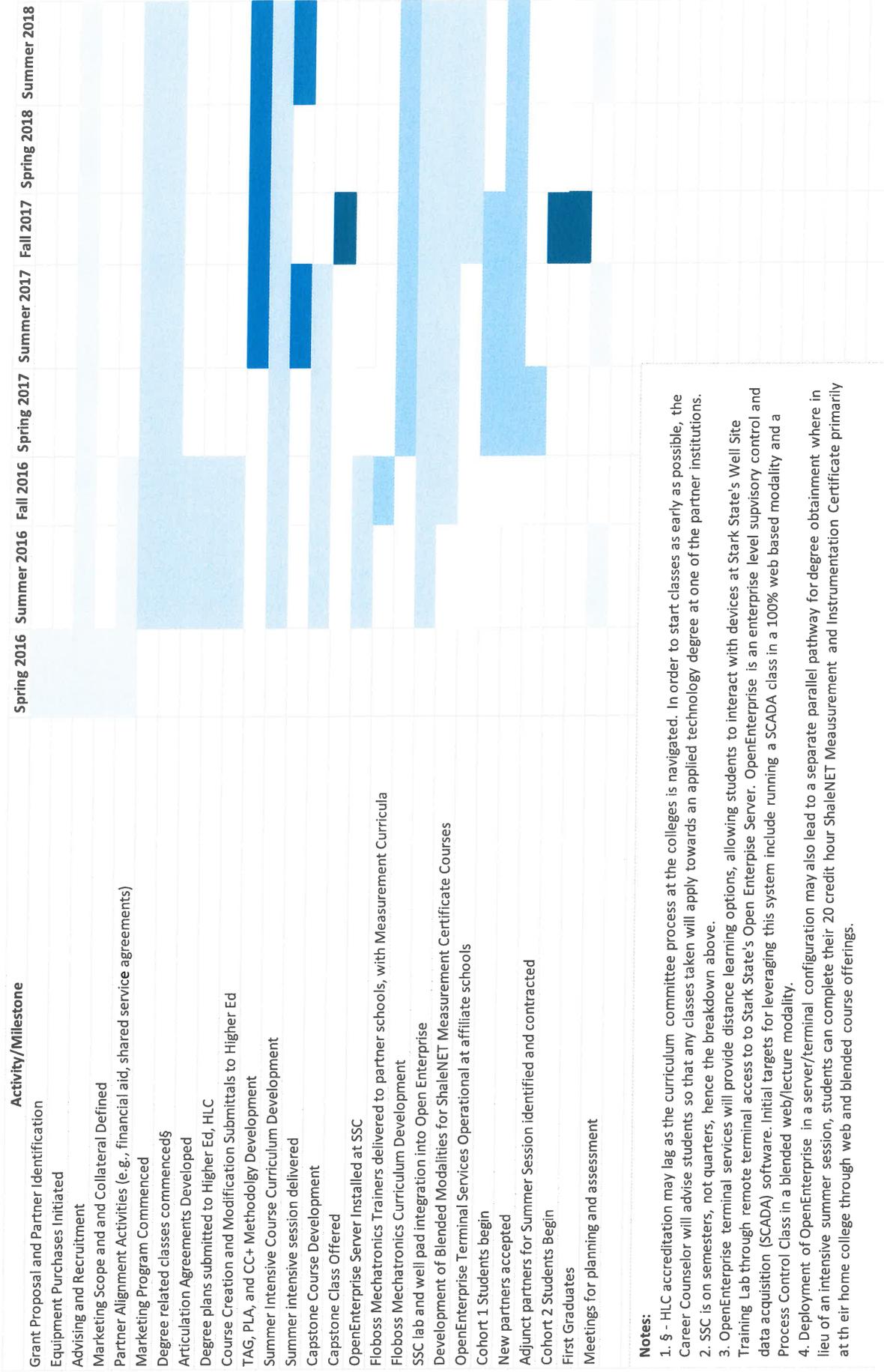
Analysis of Skills and Competencies
Core Industries Related to Oil and Gas Development
Appalachian Basin

NAICS Codes & Description of Industry Workshed	Flow Measurement/ Totalizing	Sensors: Pressure, Level, and Temperature	Sensors: Proximity/ Robotics Control	Process Control	SCADA	PLC	Prime Mover	Hydraulics Pneumatics	AC/DC
MANUFACTURING									
3241 Petroleum and Coal Products	X	X		X	X	X	X	X	X
3251 Basic Chemicals	X	X		X	X	X	X	X	X
3252 Resins and Synthetic Rubbers, Fibers, and Filaments	X	X		X	X	X	X	X	X
3253 Pesticides, Fertilizers, and Other Agr. Chemicals	X	X		X	X	X	X	X	X
3254 Pharmaceuticals and Medicine	X	X	X	X	X	X	X	X	X
3259 Other Chemical Products	X	X	X	X	X	X	X	X	X
3271 Clay Products	X	X		X	X	X	X	X	X
3279 Other Nonmetallic Mineral Products	X	X		X	X	X	X	X	X
3311 Iron, Steel, and Ferroalloys	X	X		X	X	X	X	X	X
3313 Aluminum Production and Processing	X	X		X	X	X	X	X	X
3315 Foundries	X	X		X	X	X	X	X	X
3331 Agr., Construction, and Mining Machinery		X	X	X	X	X	X	X	X
3332 Industrial Machinery		X	X	X	X	X	X	X	X
3333 Commercial and Service Industry Machinery		X	X	X	X	X	X	X	X
3336 Engines, Turbines, and Power Trans. Equipment		X	X	X	X	X	X	X	X
3339 Other General Purpose Machinery		X	X	X	X	X	X	X	X
3341 Computers and Peripheral Equipment		X	X	X	X	X	X	X	X
3342 Communications Equipment		X	X	X	X	X	X	X	X
3343 Audio and Video Equipment		X	X	X	X	X	X	X	X
3344 Semiconductors and Other Electronic Components		X	X	X	X	X	X	X	X
3345 Navigation, Measurement, and Control Instruments		X	X	X	X	X	X	X	X
3353 Electrical Equipment		X	X	X	X	X	X	X	X
3359 Other Electrical Equipment and Components		X	X	X	X	X	X	X	X
ENERGY									
2111 Oil and Gas Extraction	X	X		X	X	X	X	X	X
2122 Metal Ore Mining	X	X		X	X	X	X	X	X
2211 Electric Power Generation, Trans., and Distribution	X	X		X	X	X	X	X	X

Notes:

- SCADA = Supervisory Control and Data Acquisition
PLC = Programmable Logic Controllers
AC/DC = Alternating Current/Direct Current
I&E = Instrumentation and Electronics
Prime Movers = motive force providers such as pumps, pulleys, and associated motors
- Columns Highlighted in Green indicate classes or coursework currently contained in ShaleNET programs: Mechatronics, Process Operation, and Instrumentation and Electronics pathways.
- Column Highlighted in Red is not typically covered in detail in Oil and Gas Industry production, transportation, or processing.

Attachment E: ShaleNET Share GANTT Chart



Notes:

1. \$ - HLC accreditation may lag as the curriculum committee process at the colleges is navigated. In order to start classes as early as possible, the Career Counselor will advise students so that any classes taken will apply towards an applied technology degree at one of the partner institutions.
2. SSC is on semesters, not quarters, hence the breakdown above.
3. OpenEnterprise terminal services will provide distance learning options, allowing students to interact with devices at Stark State's Well Site Training Lab through remote terminal access to Stark State's Open Enterprise Server. OpenEnterprise is an enterprise level supervisory control and data acquisition (SCADA) software. Initial targets for leveraging this system include running a SCADA class in a 100% web based modality and a Process Control Class in a blended web/lecture modality.
4. Deployment of OpenEnterprise in a server/terminal configuration may also lead to a separate parallel pathway for degree obtainment where in lieu of an intensive summer session, students can complete their 20 credit hour ShaleNET Measurement and Instrumentation Certificate primarily at their home college through web and blended course offerings.

Attachment F: References

References

- ⁱ American Association for Higher Education. "New Agenda on School/College Collaboration," AAHE Bulletin. Vol. 45(9), pgs. 10-13. May 1993.
- ⁱⁱ Wilbur, F.P. & Lambert, L.M. "Linking America's Schools and Colleges: Guide to Partnerships & National Directory (2nd ed.). Washington, DC. American Association for Higher Education. 1995.
- ⁱⁱⁱ Cuseo, Joe. "Collaboration Between Schools & Colleges, aka, School-College Partnerships." *Perspectives* 5.1 (2008): 4A-11A.
- ^{iv} Springer, Leonard et al. "Effects of Small-Group Learning on Undergraduates in Science, Mathematics, Engineering and Technology: A Meta-Analysis." Research Monograph No. 11. University of Wisconsin-Madison, National Institute for Science Education. (1997).

Ohio Higher Education Innovation Grant Program

Name of Lead Institution (only one)	Stark State College
Project Start Date	July 1, 2016
Primary Contact - Individual must be authorized to sign grant contract and legally responsible as representative.	Thomas A. Chiappini Vice President for Business Affairs Stark State College 6200 Frank Avenue NW, Suite S302 North Canton, OH 44720 (330) 494-6170, ext. 4256 tchiappini@starkstate.edu
President	Para M. Jones
Project Director/s	Jean Barbato ShaleNET Regional Hub Case Manager Stark State College 6200 Frank Avenue NW, Suite B215 North Canton, OH 44720 (330) 494-6170, ext. 5194 jbarbato@starkstate.edu
1) Certification by Authorized Official:	
To the best of my knowledge and belief, the information contained in this application is true and correct. The document has been duly authorized to comply with the required assurances.	
Signature of Authorized Official:	
Typed Name and Title: Thomas A. Chiappini, Vice President for Business Affairs	
Date: 03/09/16	
2) Administering Institution:	
Contact Person: Caroline Maloney	
Title: Strategic Grants Development Officer	
Address: 6200 Frank Avenue NW, Suite S306H, North Canton, OH 44720	
Email: cmaloney@starkstate.edu	
3) Educational Partners (please submit separate information for each partner)	
Institution Name: Eastern Gateway Community College	
Contact Person: Sherri Van Tassel	
Title: Vice President for Administrative Services	
Address: 4000 Sunset Boulevard, Steubenville, OH 43952	
Email: svantassel@egcc.edu	
Institution Name: Hocking Community College	
Contact Person: Keith Gandor	
Title: Department Chair of Engineering and Technology	
Address: 3301 Hocking Parkway, Nelsonville, OH 45764	
Email: gandork@hocking.edu	
4) Other Partners (please submit separate information for each partner)	
Institution Name: Malone University	
Contact Person: Cindy Lundin	
Title: Events Coordinator	
Address: 2600 Cleveland Avenue NW, Canton, OH 44709	
Email: clundin@malone.edu	

Activity	Total	Dept. of Higher Education	Education (OTC, Community College, University) Funds	Name of Education Institution	Other Partner Funds	Name of Other Partners	Activity Description Summary
Equipment (list by item)							
FlowBoss Mechatronics Trainer	\$ 40,000	\$ 40,000					The FlowBoss Mechatronics Trainer is a packaged unit that includes a local flow computer, Orifice Plates, Resistive Thermal Devices, Turbine Metering, Multi-variable Sensors and Tubing. This equipment will enable partner colleges to teach American Gas Alliance 3 and 7 Flow Metering and Custody Transfer. Stark State will provide partner colleges with four units each (8 total) to advance their PLC, Sensor, Instrumentation and Mechatronics offerings to align proficiencies with ShaleNET requirements. Each unit is priced at \$5,000 each. The project will purchase two open enterprise systems to enable partner institutions to run simulated and actual process control environments through a remote terminal. This unit will talk to lab media runs and instrumentation to monitor and maintain actual PLC processes. Each unit is priced at \$25,484 to be covered by ODHE funds.
Open Enterprise SCADA Distribution System	\$ 50,968	\$ 50,968					The Enterprise Licenses support Web4 access to the Oil and Gas Training Lab at Partner Institutions. The seat licenses will be managed by Stark State for the use of partner institutions. The project seeks to secure 16 concurrent-use seat licenses at \$1,200 per license.
Open Enterprise Seat Licenses	\$ 19,200	\$ 19,200					The Project Coordinator will be paid a base salary of \$43,068 in Year-one and \$44,145 in Year-two (includes for a 2.5% cost of living increase). Fringe benefits of 16 percent for Workers Compensation (.00397%), FICA (.0145%), Retirement (.14%), Health and dental benefits will also be provided at 8% of cost or \$17,383.76 in year one and \$19,122 in year two to account for annual insurance rate increases. Project Coordinator salary costs will be split between ODHE grant funds and other outside local funds.
Personnel - Positions							
Individual A- Project Coordinator (Stark State)	\$ 134,539	\$ 100,162			\$ 34,377	Chevron	The Project Coordinator will be paid a base salary of \$43,068 in Year-one and \$44,145 in Year-two (includes for a 2.5% cost of living increase). Fringe benefits of 16 percent for Workers Compensation (.00397%), FICA (.0145%), Retirement (.14%), Health and dental benefits will also be provided at 8% of cost or \$17,383.76 in year one and \$19,122 in year two to account for annual insurance rate increases. Project Coordinator salary costs will be split between ODHE grant funds and other outside local funds.
Individual B - Coordinator for Oil and Gas (Stark State)	\$ 87,100		\$ 87,100	Stark State College			The College's Coordinator for Oil and Gas programs will assist in implementing the ShaleNET share project. The College will allocated 50 percent of base salary, fringe and health benefit costs (valued at \$67,100 annually) to support the project in years one and two. The project will also be supported by Eastern Gateway Community College. Eastern Gateway will collaborate with Stark State to develop TAG course modules and implement the 40/20 shared education model. They will serve as the primary point of contact for the Project Coordinator. The project team has allocated \$15K per year for each institution to cover 20% of faculty time and effort to serve as Advisors. Eastern Gateway has included \$9,307 in administrative services as leveraged funds for this project.
Individual C - ShaleNET Share Advisors (Eastern Gateway/Hocking)	\$ 69,307	\$ 60,000	\$ 9,307	Eastern Gateway Community College			The project will support the project coordinator and provide supplemental contracts by Stark State to teach oil and gas technical courses during the 10-week summer intensive program. Four of the instructors will be paid the SSC adjunct rate of \$3,198 to teach four contact hour courses and one will be paid \$1,648 to teach a two contact hour course. The Project team will apply adjunct costs to the grant during years one and two while the project is under development.
Individual D - Adjunct Instructors (All Institutions - Paid through Stark State)	\$ 28,880	\$ 28,880					The project will support the project coordinator and provide supplemental contracts by Stark State to teach oil and gas technical courses during the 10-week summer intensive program. Four of the instructors will be paid the SSC adjunct rate of \$3,198 to teach four contact hour courses and one will be paid \$1,648 to teach a two contact hour course. The Project team will apply adjunct costs to the grant during years one and two while the project is under development.
Facilities							
Supplies	\$ -	\$ -					
Purchased Services							
Curriculum Developers	\$ 35,000	\$ 35,000					This contracted service provider from outside Stark State will work with the project team/partners to establish TAG course curriculum for submission to ODHE and HLC. The project will subcontract the work at a rate \$40 per hour for a total of 875 hours (110 days) of work. The work may be divided across several industry subject-matter experts with education experience.
Summer Program Housing	\$ 62,400	\$ 62,400					With the implementation of summer sessions, Stark State College anticipates being able to serve 24 students in the year-two summer intensive. Malone University has agreed to provide housing and meals (Mon-Thu) for ten-weeks (40 nights per student) at a rate of \$20 per student/day (rooms) and \$12.50 per student/day (meals) or \$12.50 per student/day.
External Evaluator	\$ 50,000	\$ 50,000					The project team will engage an external evaluator to provide annual evaluation services. SPR brings special value-add to the project because they have also served as the evaluator for the ShaleNET U.S. project funded by DOL and have experience with the ShaleNET outcomes and corrective actions. The evaluator will work with the project team to develop annual reports, assessment and corrective action plans.
Expanded Network Bandwidth Provider	\$ 9,600	\$ 9,600					The expanded up and downstream bandwidth requested herein supports partner college access to the Wellsite Training Center systems and sustain increased external demand on our systems from partners. The expanded bandwidth costs \$400 per month for the 24-month project period.
Travel							
Outreach (Mileage)	\$ 3,267	\$ 2,000			\$ 1,267	Chevron	Stark State College, through outside local funds, will support a portion of travel costs for this project as leveraged funds. A total of \$2,000 will be set aside in the grant funds to support outreach to existing partners and other Appalachian Basin College. Mileage will be paid at the federal rate of 0.55 cents per mile.
Building Improvements							
Other (Describe)							
Scholarships	\$ 72,000	\$ 72,000					The Project Team would offer \$1,500 scholarships to the 48 anticipated students to be served in years one and two of the project.
Print Materials	\$ 10,000	\$ 10,000					The project will provide on-campus ShaleNET related materials to partner institutions. This budget sets aside \$5,000 per institution for these materials.
Marketing	\$ 135,500	\$ 122,000			\$ 13,500	Chevron	The ShaleNET Share partners will work collaboratively with the Stark State College Marketing Department to develop and implement a three-county marketing plan. The Colleges Director of Marketing needs to include print (\$15K), outdoor (\$20K), radio (\$18K) and digital/online (\$8K) per year to saturate the three market areas. These costs will be paid through the ODHE grant funds in the first two years with a supplemental \$13,500 in leveraged funds to cover any costs for use of outside firms to develop marketing materials.
SUBTOTAL - DIRECT	\$ 807,761	\$ 662,210	\$ 96,407		\$ 49,144		
Indirect Costs (% of Direct)							
	\$ 66,100	\$ 52,977	\$ 13,207	Stark State College			Indirect costs will be charged to the ODHE grant funds at eight percent of direct costs. Stark State College has a negotiated Federal Indirect Cost Rate of 48% of Salary and Fringe. The difference between the two rates will be included in this proposal as leveraged funds.
TOTALS BY SOURCE	\$ 873,861	\$ 715,187	\$ 109,614		\$ 49,144		

Each Activity must be described in-depth the budget narrative

Implementation Schedule

Please provide a brief bulleted list of major components of grant activity taking place each term.

Term	Grant Activities
Winter 2016 (NA)	
Spring 2016 (Mar-May)	<ul style="list-style-type: none"> • Grant proposal scoping and preparation • Equipment Purchases initiated • Advising and recruitment started • Marketing scope and initial informational collateral defined • Partner alignment meeting
Summer 2016 (Jun-Aug)	<ul style="list-style-type: none"> • Articulation Agreements Finalized • Degree Plans submitted to HLC, Higher Ed • ARL234 Gas Compression and Flow Dynamics ported to Web 4 Delivery • PET141 modified to include Artificial lift • PET142 Retired • Master Syllabus created for PET143 Process Controls in Petroleum Industry • Master Syllabus created for PET144 Capstone Class • Summer Intensive course delivery plan development begins • OpenEnterprise terminal server installed at SSC • Integration of SSC well pad and lab instrumentation into OpenEnterprise begins. • FloBoss Mechatronics trainers assembly and curriculum share begins • Marketing program commenced
Fall 2016 (Sept-Dec)	<ul style="list-style-type: none"> • Web 4 course offering of Gas Compression and Flow Dynamics • Student Cohort 1 begin programs at all schools • Capstone and Summer Intensive course development continues • FloBoss Mechatronics trainers assembly and curriculum share begins
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Spring 2017 (Jan-May)	<ul style="list-style-type: none"> • Floboss Trainers delivered to partner schools • Professional Development workshop for Floboss Mechatronix Trainers
Summer 2017 (Jun-Aug)	<ul style="list-style-type: none"> • Summer intensive session • OpenEnterprise terminals installed at partner colleges • Professional Development Workshop for Open Enterprise
Fall 2017	<ul style="list-style-type: none"> • Project funding period evaluation process completed and submitted • Two-year data analysis and reporting finalized and submitted • Implement post-grant sustainability plan

Ohio Higher Education Innovation Grant Program

Name of Lead Institution (only one)	Stark State College
Project Start Date	July 1, 2016
Primary Contact - Individual must be authorized to sign grant contract and legally responsible as representative.	Thomas A. Chiappini Vice President for Business Affairs Stark State College 6200 Frank Avenue NW, Suite S302 North Canton, OH 44720 (330) 494-6170, ext. 4256 tchiappini@starkstate.edu
President	Para M. Jones
Project Director/s	Jean Barbato ShaleNET Regional Hub Case Manager Stark State College 6200 Frank Avenue NW, Suite B215 North Canton, OH 44720 (330) 494-6170, ext. 5194 jbarbato@starkstate.edu
1) Certification by Authorized Official:	
To the best of my knowledge and belief, the information contained in this application is true and correct. The document has been duly authorized to comply with the required assurances.	
Signature of Authorized Official:	
Typed Name and Title: Thomas A. Chiappini, Vice President for Business Affairs	
Date: 03/09/16	
2) Administering Institution:	
Contact Person: Caroline Maloney	
Title: Strategic Grants Development Officer	
Address: 6200 Frank Avenue NW, Suite S306H, North Canton, OH 44720	
Email: cmaloney@starkstate.edu	
3) Educational Partners (please submit separate information for each partner)	
Institution Name: Eastern Gateway Community College	
Contact Person: Sherri Van Tassel	
Title: Vice President for Administrative Services	
Address: 4000 Sunset Boulevard, Steubenville, OH 43952	
Email: svantassel@egcc.edu	
Institution Name: Hocking Community College	
Contact Person: Keith Gandor	
Title: Department Chair of Engineering and Technology	
Address: 3301 Hocking Parkway, Nelsonville, OH 45764	
Email: gandork@hocking.edu	
4) Other Partners (please submit separate information for each partner)	
Institution Name: Malone University	
Contact Person: Cindy Lundin	
Title: Events Coordinator	
Address: 2600 Cleveland Avenue NW, Canton, OH 44709	
Email: clundin@malone.edu	

Activity	Total	Dept. of Higher Education	Education (OTC, Community College, University) Funds	Name of Education Institution	Other Partner Funds	Name of Other Partners	Activity Description Summary
Equipment (list by item)							
FlowBoss Mechatronics Trainer	\$ 40,000	\$ 40,000					The FlowBoss Mechatronics Trainer is a packaged unit that includes a local flow computer, Orifice Plates, Resistive Thermal Devices, Turbine Metering, Multi-variable Sensors and Tubing. This equipment will enable partner colleges to teach American Gas Alliance 3 and 7 Flow Metering and Custody Transfer. Stark State will provide partner colleges with four units each (8 total) to advance their PLC, Sensor, Instrumentation and Mechatronics offerings to align proficiencies with ShaleNET requirements. Each unit is priced at \$5,000 each. The project will purchase two open enterprise systems to enable partner institutions to run simulated and actual process control environments through a remote terminal. This unit will talk to lab media runs and instrumentation to monitor and maintain actual PLC processes. Each unit is priced at \$25,484 to be covered by ODHE funds.
Open Enterprise SCADA Distribution System	\$ 50,968	\$ 50,968					The Enterprise Licenses support Web4 access to the Oil and Gas Training Lab at Partner Institutions. The seat licenses will be managed by Stark State for the use of partner institutions. The project seeks to secure 16 concurrent-use seat licenses at \$1,200 per license.
Open Enterprise Seat Licenses	\$ 19,200	\$ 19,200					The Project Coordinator will be paid a base salary of \$43,068 in Year-one and \$44,145 in Year-two (includes for a 2.5% cost of living increase). Fringe benefits of 16 percent for Workers Compensation (.00397%), FICA (.0145%), Retirement (.14%), Health and dental benefits will also be provided at 8% of cost or \$17,383.76 in year one and \$19,122 in year two to account for annual insurance rate increases. Project Coordinator salary costs will be split between ODHE grant funds and other outside local funds.
Personnel - Positions							
Individual A- Project Coordinator (Stark State)	\$ 134,539	\$ 100,162			\$ 34,377	Chevron	
Individual B - Coordinator for Oil and Gas (Stark State)	\$ 87,100		\$ 87,100	Stark State College			The College's Coordinator for Oil and Gas programs will assist in implementing the ShaleNET share project. The College will allocated 50 percent of base salary, fringe and health benefit costs (valued at \$67,100 annually) to support the project in years one and two. The project will purchase two open enterprise systems to enable partner institutions to run simulated and actual process control environments through a remote terminal. This unit will talk to lab media runs and instrumentation to monitor and maintain actual PLC processes. Each unit is priced at \$25,484 to be covered by ODHE funds.
Individual C - ShaleNET Share Advisors (Eastern Gateway/Hocking)	\$ 69,307	\$ 60,000	\$ 9,307	Eastern Gateway Community College			The project team has allocated \$15K per year for each institution to cover 20% of faculty time and effort to serve as Advisors. Eastern Gateway has included \$9,307 in administrative services as leveraged funds for this project.
Individual D - Adjunct Instructors (All Institutions - Paid through Stark State)	\$ 28,880	\$ 28,880					The adjunct instructors (i.e. summer session instructors) will be provided supplemental contracts by Stark State to teach oil and gas technical courses during the 10-week summer intensive program. Four of the instructors will be paid the SSC adjunct rate of \$3,198 to teach four contact hour courses and one will be paid \$1,648 to teach a two contact hour course. The Project team will apply adjunct costs to the grant during years one and two while the project is under development.
Facilities							
Supplies	\$ -	\$ -					
Purchased Services	\$ -	\$ -					
Curriculum Developers	\$ 35,000	\$ 35,000					This contracted service provider from outside Stark State will work with the project team/partners to establish TAG course curriculum for submission to ODHE and HLC. The project will subcontract the work at a rate \$40 per hour for a total of 875 hours (110 days) of work. The work may be divided across several industry subject-matter experts with education experience.
Summer Program Housing	\$ 62,400	\$ 62,400					With the implementation of summer sessions, Stark State College anticipates being able to serve 24 students in the year-two summer intensive. Malone University has agreed to provide housing and meals (Mon-Thu) for ten-weeks (40 nights per student) at a rate of \$20 per student/day (rooms) and \$12.50 per student/day (meals) or \$12.50 per student/day.
External Evaluator	\$ 50,000	\$ 50,000					The project team will engage an external evaluator to provide annual evaluation services. SPR brings special value-add to the project because they have also served as the evaluator for the ShaleNET U.S. project funded by DOL and have experience with the ShaleNET outcomes and corrective actions. The evaluator will work with the project team to develop annual reports, assessment and corrective action plans.
Expanded Network Bandwidth Provider	\$ 9,600	\$ 9,600					The expanded up and downstream bandwidth requested herein supports partner college access to the Wellsite Training Center systems and sustain increased external demand on our systems from partners. The expanded bandwidth costs \$400 per month for the 24-month project period.
Travel							
Outreach (Mileage)	\$ 3,267	\$ 2,000			\$ 1,267	Chevron	Stark State College, through outside local funds, will support a portion of travel costs for this project as leveraged funds. A total of \$2,000 will be set aside in the grant funds to support outreach to existing partners and other Appalachian Basin College. Mileage will be paid at the federal rate of 0.55 cents per mile.
Building Improvements							
Other (Describe)							
Scholarships	\$ 72,000	\$ 72,000					The Project Team would offer \$1,500 scholarships to the 48 anticipated students to be served in years one and two of the project.
Print Materials	\$ 10,000	\$ 10,000					The project will provide on-campus ShaleNET related materials to partner institutions. This budget sets aside \$5,000 per institution for these materials.
Marketing	\$ 135,500	\$ 122,000			\$ 13,500	Chevron	The ShaleNET Share partners will work collaboratively with the Stark State College Marketing Department to develop and implement a three-county marketing plan. The Colleges Director of Marketing needs to include print (\$15K), outdoor (\$20K), radio (\$18K) and digital/online (\$8K) per year to saturate the three market areas. These costs will be paid through the ODHE grant funds in the first two years with a supplemental \$13,500 in leveraged funds to cover any costs for use of outside firms to develop marketing materials.
SUBTOTAL - DIRECT	\$ 807,761	\$ 662,210	\$ 96,407		\$ 49,144		
Indirect Costs (% of Direct)							
	\$ 66,100	\$ 52,977	\$ 13,207	Stark State College			Indirect costs will be charged to the ODHE grant funds at eight percent of direct costs. Stark State College has a negotiated Federal Indirect Cost Rate of 48% of Salary and Fringe. The difference between the two rates will be included in this proposal as leveraged funds.
TOTALS BY SOURCE	\$ 873,861	\$ 715,187	\$ 109,614		\$ 49,144		

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I. Trade Secrets

This proposal contains no trade secrets.

II. Executive Summary

Stark State College proposed to implement a two-year college shared/blended learning education model that draws upon research conducted across the past 25 years around K-12 to postsecondary bridging partnerships and best practices. Through the “ShaleNET Share” project, Stark State and its partner institutions seek to surface and incubate institutional and programmatic innovation through collaborative design, analysis and decision making. This project seeks to pilot a new collaborative model to generate real large-scale changes in institutional cultures and impact program offerings, support services, student success and education cost outcomes. To achieve these outcomes, the ShaleNET Share” project will pilot a 40/20 academic sharing model with Appalachian Basin two-year colleges to:

- Disrupt traditional inter-segmental gaps, educational silos, and competition for students and service-area dominance among regional two-year colleges;
- Develop a replicable two-year college shared education model that promotes student retention and success while reducing time-to-completion;
- Expand, standardize and increase access to ShaleNET degree and certificate programs at non-affiliate two-year colleges in Ohio;
- Refine of the ShaleNET curriculum to address the specific needs of Ohio’s nascent oil and gas, manufacturing, and petrochemical industries;
- Implement a shared resource/services model that mitigates redundancy, promotes operational and fiscal efficiency, enhances institutional capacity and promotes intensive student support;
- Create a summer shared faculty arrangement where oil and gas teachers can impart/gain subject matter knowledge and understanding about core concepts and pedagogical strategies; and
- Reduce student costs for two-year degree and certificate training.

This collaborative approach will enable students to obtain a ShaleNET Measurement and Mechatronics Technician A.A.S. degree by completing 40 hours of core/technical classes at their home institution and a 20-hour ShaleNET Instrumentation and Measurement Technician Certificate at Stark State College. The project design encourages significant cost saving (student and institutional) and identifies best practices and corrective actions toward development of a replicable two-year college education sharing model that can be applied to other fields of study.

PROJECT NARRATIVE

I. Project Design

ShaleNET U.S. leverages the collective experience of industry, the public workforce system, and a consortium of “affiliate” college hubs to help individuals build lasting careers in the oil and natural gas industry. ShaleNET provides upstream, midstream and downstream for-credit and non-credit education programs that respond to industry needs through a stackable credential model. This model allows multiple entry and exit points to individuals seeking an education with a standardized curriculum that enables them to continue and finish their education wherever ShaleNET is offered. Affiliate Hub partners, like Stark State College, are unique because they have committed multi-million dollar investments in ShaleNET-related state-of-the-art labs and equipment and serve as an integral part of the stackable credential model that is the cornerstone of the program.

The current economic challenges associated with oil and gas exploration are well documented. Oil and gas prices are at historical lows. Upstream jobs like drilling and hydrofracking have become scarcer. However, jobs associated with producing, processing, and transporting oil and gas have remained stable, with midstream and downstream industry partners like Marathon, Williams and Dominion seeking to replace up to two-thirds of their current retirement-age workforce over the next five years. Furthermore, the availability of inexpensive petrochemical feedstocks such as ethane and propane, as well as a protracted period of cheap electric and fuel power have already resulted in a reversal of costs. Manufacturing overseas is no longer as viable as it once was, and a critical aspect of reshoring is the availability a sufficient labor pool. Recently, Ohio became a destination for oil and gas jobs, and now we can solidify that position by also making Ohio a preferred destination for manufacturing and industry. Ohio’s technical colleges are the front line of workforce preparation and we are poised to meet this challenge through collaboration and partnership.

As an established ShaleNET U.S. Hub partner, Stark State has gained perspective regarding the process of “teching up” the workforce. We’ve learned that hands-on experience with operation and maintenance of process controls, instrumentation and electronics (aka mechatronics) is important. We have also learned that there is significant crossover with mechatronics skills utilized in oil and gas production transport and those used in today’s manufacturing, transport, and plastics industries.

The ShaleNET partnership has also helped Stark State identify challenges associated with aligning multiple degree pathways with multiple institutions. More pathways creates more administrative overhead with substitutions and transfers. It also erodes brand recognition by employers (too many degrees to choose from). There are currently five pathways in Stark State College's ShaleNET degree offerings. Rather than articulating all of these degree pathways, the ShaleNET Share project seeks to create a new single articulation pathway between partner colleges for a ShaleNET Measurement and Mechatronics Technician Associates of Applied Science (A.A.S.) Degree. This degree will be comprised of 40 credit hours of widely applicable general and technical skill courses already offered at each partner college such as chemistry, algebra, AC/DC circuits, blueprint reading, programmable logic controllers and industrial sensors. The ShaleNET Instrumentation and Measurement Technician Certificate, offered by Stark State, will add 20 credit hours of coursework in mechatronics, instrumentation, process control, measurement and custody transfer. These are skills that cross over between oil and gas, manufacturing, plastics and petrochemical industry jobs, and Stark State's Well Site Training Center provides hands-on technical learning experience for each.

This proposed ShaleNET Share project will use a 40/20 academic shared service agreement which will enable Ohio institutions to produce mechatronics and measurement technicians from multiple educational partners, and align them under a maintainable industry-recognized technical skill set. The 40/20 shared education approach that enables students to obtain an A.A.S. degree at their home institution by completing a 20-hour ShaleNET Instrumentation and Measurement Technician Certificate at Stark State College and 40 hours of core classes at partner institutions. The 40/20 approach mitigates the need for each institution to replicate the \$3.7 million ShaleNET Wellsite Training Lab currently housed at Stark State College, while increasing Ohio's capacity to produce the skilled oil and gas industry labor force of the future.

For the purposes of this pilot, the project team will focus its efforts in the Ohio Appalachian region where oil and gas production and workforce demand is most prevalent. Eastern Gateway Community College and Hocking College will collaborate with Stark State on this project. Letters of Commitment and a Partnership Agreement from the above two-year colleges are attached to this proposal. (see

Attachment A)

This initial partnership will focus on ShaleNET expansion at two Ohio technical colleges, however the project design holds promise for future articulations to other technical Appalachian Basin schools in Ohio, Pennsylvania, West Virginia and Kentucky to attract additional regional students. Once the degree pathways are ratified by Ohio Department of Higher Education and the Higher Learning Commission, new partners in Ohio can be added at any time during the initial project period. Stark State College has already completed preliminary articulation mapping for additional Ohio two-year colleges such as Belmont, Washington State, and Zane State.

The ShaleNET Share model also incorporates the value-add of bridging partnerships between high schools and postsecondary institutions and applies it to two-year college collaborations in Ohio. By aligning the degree pathways at several institutions, it will be easier to establish core College Credit Plus (CC+) offerings at regional high schools as the ShaleNET Share two-year college relationships mature. Expanding CC+ offerings in future phases of the project will have the added effect of further reducing postsecondary time-to-completion and overall degree cost.

During the 1990's, the national reform agenda of the American Association for Higher Education (AAHE) included secondary/postsecondary collaboration as a key focus.ⁱ These partnerships focused primarily on (a) secondary-postsecondary articulation and curriculum development; (b) professional development opportunities for faculty and academic support professionals to promote engagement in service and scholarship; and (c) early identification and intervention programs for educational enrichment and academic skill building.ⁱⁱ The project team will apply best practices identified in the research findings to a pilot two-year college education sharing model to promote the following innovations, shown in **Table I**, within Ohio's two-year college environment.

Table I: ShaleNET Share Project Innovations
• A replicable two-year college shared education model that promotes collaboration and efficiency.
• Expansion, standardization of and increased access to degree and certificate programs at non-affiliate two-year colleges in Ohio.
• Refinement of the ShaleNET curriculum to address the specific needs of Ohio's nascent oil and gas, manufacturing, and petrochemical industries.
• Implementation of a shared resource model that mitigates redundancy and promotes operational and fiscal efficiency.
• Implementation of a shared services model to enhance institutional capacity and achievement of student success and completion outcomes.
• Creation of a summer shared faculty arrangement where oil and gas teachers can impart/gain subject matter knowledge, and understanding about core concepts and pedagogical strategies.
• Reductions in student costs for two-year degree and certificate training.

Through this \$870,000 two-year project, the team seek to achieve the project goals shown in **Table II**. Student enrollment, completion and job placement outcomes generated through these goals and objectives will continue to be tracked for three-years following the end of the project period.

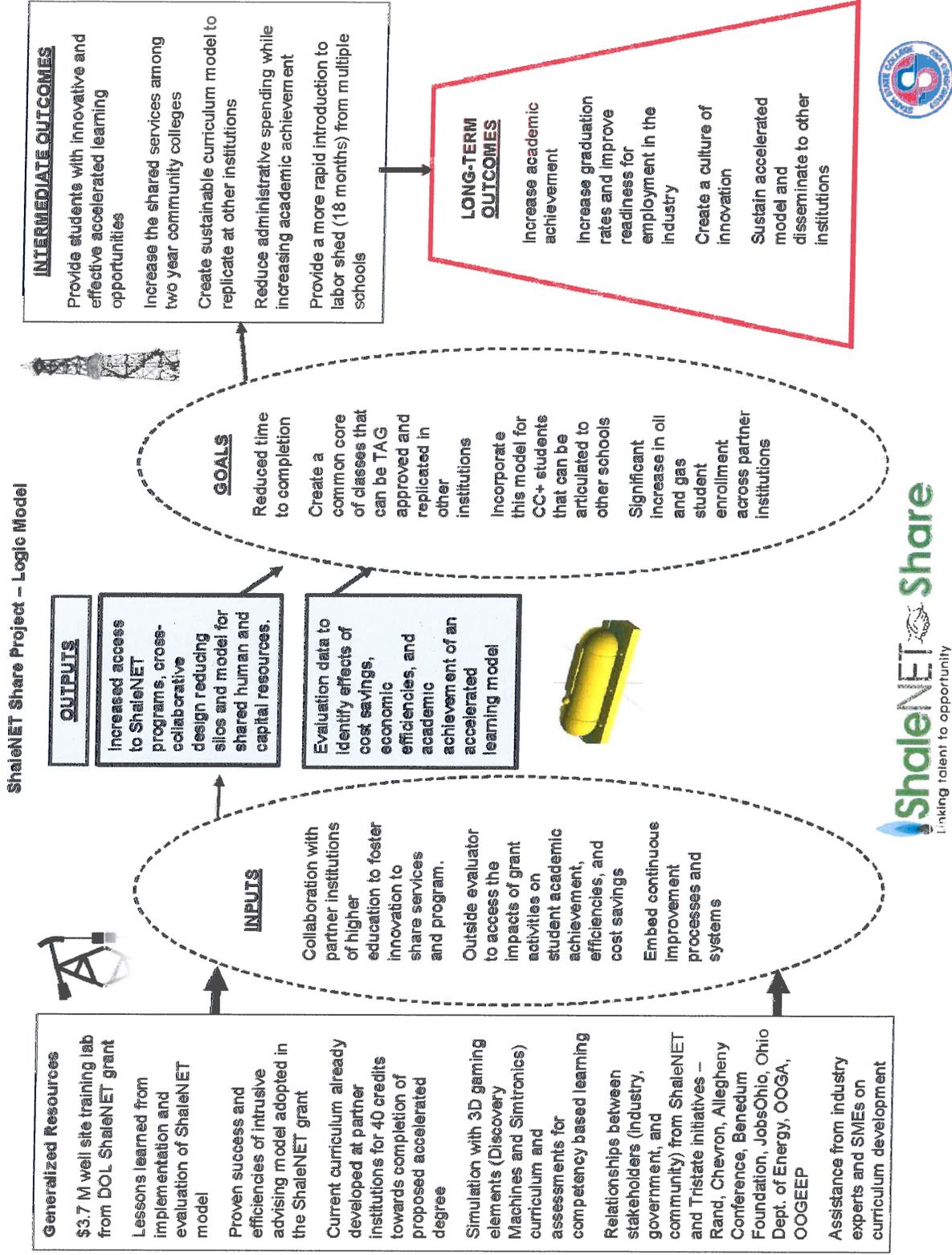
Table II: ShaleNET Share Project Goals and Objectives	
•	Development of an articulated 40/20 shared education program with up to five institutions enabling student cohorts to complete ShaleNET A.A.S. degrees on their home campus and a special ShaleNET Measurement Technician Certificate (with Labs) at Stark State College.
•	Access to Stark State College's ShaleNET Wellsite Training Lab for up to 80 students and seven faculty members annually as a shared resource for blended learning modalities.
•	Development of at least seven but not more than 20 Petroleum/Core Transfer Assurance Guide (TAG) courses supporting replication and expansion of the shared education model.
•	Development of an 18-month Petroleum Technology Measurement and Mechatronics Technician A.A.S. Degree.
•	Coordination of Financial Aid benefits/sharing to support three continuous semesters of education (Using Transient Student and Ohio College Opportunity Grant Rules).
•	Reduction in time-to-completion for students from 24 months to 18 months.
•	Creation of professional development opportunities for up to 14 Ohio postsecondary faculty.
•	Increases in Ohio's skilled oil and gas workforce through training opportunities for up to 108 students during the project period and an additional 160 in years three-through-five in the post-project period.
•	Creation of a replicable shared education model that be tested in other fields of study and regions across Ohio.

A logic model for the ShaleNET Share project is included below in **Chart I** on page six and a GANTT Chart of project activities to achieve goals and objectives is included in this proposal as **Attachment E**.

Traditional enrollment and funding models for two-year colleges make true institutional “reset” difficult. Historical practices have encouraged inter-segmental gaps, educational silos, and competition for students and service-area dominance among regional colleges. One disruptive approach foundational to the ShaleNET Share model is the creation of a platform for surfacing and incubating institutional and programmatic innovation through collaborative design, analysis and decision making. This project will pilot a new collaborative design to generate real, large-scale changes in institutional cultures and impact program offerings, support services and student success outcomes.

The education model proposed herein is critical to “resetting” the current two-year college paradigm in Ohio, because it promotes shared responsibility for academic achievement and collaboration through a series of partnership touchpoints and student competency goals. The most important of these touchpoints is the focused standardization of oil and gas education through the use of ShaleNET's industry recognized curriculum. Use of established ShaleNET curriculum creates a seamless student

Chart 1 – ShaleNET Share Logic Model



development path across institutions without proficiency gaps. Over time, collaborative exchanges among faculty about the curriculum and implementation practices will improve the program design and make it more globally acceptable while creating a vested interest in the new standardized pedagogies. The inclusion of blended teaching modalities (face-to-face, web4 and accelerated) reduces competency completion from 24-months to 18-months by enabling the student to take credit courses at multiple institutions simultaneously. Another important partnership touchpoint is the coordination of support services and information exchanges to promote early intervention and consistent allocation of services toward student success and completion. For the purposes of this project, shared services includes access to Stark State College's Career-Motivated Academic Persistence (CareerMAP) intake advising and student support model. CareerMAP is part of a shared responsibility success model that encourages students to establish realistic education and career paths early in their college experience. The use of software tools, like My Academic Plan, help link faculty, staff, programs and support services into an integrated and personal success team to help students set and achieve realistic college-to-career goals throughout their two-year college experience. Ultimately, CareerMAP and its associated tools help students navigate their college-to-career pathway and transition from institutional to self-reliant approaches (confidence building). Overall, the collaborative touchpoints in this project are designed to promote student success while building trust amongst regional two-year colleges. The project touchpoints also create structures through which student, faculty and staff experiences can be surfaced, articulated and incorporated into full-scale reforms and impact student success.

ShaleNET Share academic achievement outcomes will be based on student completion of performance ability goals and demonstration of competence relative to others. Performance ability goals will be embedded into the 60 credit-hour plus program curriculum (see **Attachment B**) and must be achieved as follows:

Partner Institution A.A.S. Courses (40 credit hours)

Students must complete up to 40 credit hours of core and technical study (13 courses) at their home institution. **Table III** shows courses that should be completed by students at their home institution. All mapped partner institutions (current and future), except Hocking College, currently have a full

complement of courses comparable to those currently required by Stark State as part of the ShaleNET curriculum. Stark State will share curriculum for Mechanical Drive Components (MST221) or Hydraulics and Pneumatics (MST134) and PLCs and Industrial Controls (EET227) with Hocking College to complete their course list. A course proficiency crosswalk between Stark State College and the partner institutions is included in this proposal as **Attachment C**.

Table III: Core/Technical Courses Taken at Partner Institutions		
• Electrical Circuits & Devices	• Petroleum Instrumentation	• Student Success Seminar
• PLCs and Industrial Controls	• Computer Applications for Professionals	• Introduction to the Petroleum Industry
• OSHA 40-Hour HAZWOPER	• Blueprint Reading or Basic AutoCAD	• Industrial Math or College Algebra
• Social & Behavioral Sciences or Arts and Humanities Elective	• Effective Speaking or Interpersonal Communication	• Mechanical Drive Components or Hydraulics & Pneumatics
• Introduction to Chemistry		

The above-referenced courses may be taken at any time during the student’s two-year college career with the exception of Electrical Circuits and Devices, and Computer Applications for Professionals or their equivalent, which must be taken prior to attending the summer boot-camp program at Stark State College.

Stark State College ShaleNET Measurement Technician Certificate / A.A.S. Completion (20 credit hours)

Students must complete a total of 20 credit hours with Stark State through blended learning Web4/Fast Track Friday and accelerated boot-camp modalities. Students will complete six credit hours (2 courses) through a Web4/Fast Track Friday blended approach and 14 credit hours (5 courses) through an accelerated oil and gas technical boot-camp program offered each summer. The courses shown in **Table IV** must be completed with Stark State to receive the ShaleNET Instrumentation and Measurement Technician Certificate and fulfill the articulated coursework requirements needed to receive the ShaleNET Measurement and Mechatronics Technician A.A.S degree from their home institution.

Table IV: Technical Courses Taken through Stark State College		
• Production Operations	• Petroleum Process Controls	• Corrosion Basics
• Gas Compression and Flow Dynamics *	• Introduction to Supervisory Control and Data Acquisition (SCADA)	• Measurement & Basic Pipeline Operations
• Petroleum Capstone Course*		
* Courses completed through Web4/Fast Track Friday blended learning format.		

Curriculum competencies will be used to assess prior learning and ensure quality and rigor for incumbent workers and military veterans in accordance with Ohio Department of Higher Education, "PLA with a Purpose" standards released in December, 2014.

The project addresses a broad industry need: feeder programs for technicians who have a working knowledge of mechatronics, instrumentation, and measurement. The ShaleNET technician certificate and A.A.S. degree represent a consolidation of mechatronics, instrumentation, and measurement core skills derived from three current Petroleum Technology offerings at SSC: Instrumentation and Electronics, Production Technician, and Pipeline Technician A.A.S degree programs. It is anticipated that the ShaleNET Measurement and Mechatronics Technician degree pathway will supplant these existing A.A.S. degrees, although one-year certificates in each will persist and are scalable to Bachelor's Degree programs in the future. This is necessary to keep articulation pathways as simple as possible for other institutions and College Credit Plus stakeholders.

Consolidation of the original ShaleNET Petroleum Technology degrees also aligns the project with recent Tristate Partnership Workgroup findings that recognize labor shed core skillset crossover in mechatronics, instrumentation and measurement as an important aspect of attracting economic development partners. We believe that the core set of competencies and skills to be included in the measurement certificate are relevant to many NAICS Advanced Industry sectors (see **Attachment D**).

Table V shows the student participation anticipated through implementation of this project design and shared teaching model.

Table V: Total Student Participation / Academic Achievement		
Year Two	Year Three	Year Five
48 Students Completed: 16 students from each institution (combined Yr. 1 and Yr. 2)	108 Students Completed: 20 additional students from each institution in Yr. 3	368 Students Completed: 80 students annually (capacity) plus two added institutions (Yrs. 4 and 5)

These estimates are based on the enrollment sharing agreements with the original three partners. The estimates will expand exponentially as additional partners are included (years three, four and five). Lab capacity issues will need to be addressed as part of long-term program expansion (for this design and replication into other fields of study). However, equipment sharing arrangements embedded in this design will reduce the overall capital expenditure needs towards expansion.

To track and report student success outcomes, course evaluations and grade point averages will be assessed through a standardized rubric of format set by the Ohio Department of Higher Education, the Project Team and the Stark State College's Office of Institutional Research and Assessment. Records of individual student demographics, graduation rates and retention rates will be collected and maintained by the Office of Institutional Research and Assessment. Focus groups and exit interviews will be determined by the Project Team based on similar standards of credibility and content. Project results will be communicated through a variety of methods at the local, regional and State levels. Public access to these results and sharing of the same will be made available as aggregate data only, without any personal identifying information about the participants. Publications and presentations of the results will be made through Stark State College, its partners and the Ohio Department of Higher Education. Information will be shared primarily in print and online formats. In the case of detailed student data, the sharing mechanism will be incorporated into the partner articulation, subcontract and ODHE grant award agreements. Data to be published or, alternatively, which has already been published, will be made available through de-identified copies of the raw data (if a researcher in the community requests such data) or computer software databases, which do not contain any personally identifying information (i.e. numeric codes assigned to individuals).

II. Project Rationale

The ShaleNET Share project design draws upon research done across the past 25 years around collaborative approaches that bridge K-12 to postsecondary and two-year to four-year colleges and universities. The partnership bridging mechanisms used in this research, as described at the bottom of page five, will be innovatively applied to an Ohio two-year college partnership model. The project team will apply these approaches across two-year colleges to explore how collaborative education impacts institutional efficiency, costs, student time-to-completion, college access and success, and matriculation into baccalaureate programsⁱⁱⁱ. The project design also draws upon research funded by the National Science Foundation on the effects of small-group learning in the STEM undergraduate environment. Use of the cohort enrollment model in this project seeks to replicate the achievement, persistence and attitudinal improvements outcomes realized through the previous work.^{iv}

The ShaleNET Share project also builds upon Stark State College's experience as a ShaleNET Affiliate Hub and supports innovative approaches for consideration by ShaleNET U.S. as part of a larger strategic business plan development process. The Project Team will draw upon three years of existing data gathered by partner colleges implementing the ShaleNET stackable model in Ohio, Pennsylvania (Penn College of technology, Westmoreland County Community College), Texas (Navarro College) and West Virginia (Pierpont). Preliminary assessment of the ShaleNET U.S. model indicates that curricular alignment is both the most important and most challenging aspect of collaborative education partnerships. However, it is also critical to removing barriers to cross-collaboration created by traditional education business models. **Table VI** below outlines benefits and challenges identified by ShaleNET Affiliates through the U.S. Department of Labor Trade Adjustment Assistance Community College and Career Training (TAACCCT) partnership.

Table VI: Project Benefits and Challenges in the Traditional Education Environment	
Benefits	
<ul style="list-style-type: none"> • Articulation agreements are the primary mode of transferring credits between colleges; • Achieving Industry recognition of degrees requires a common set of competencies in order to provide the right message; and • Laborshed needs should dictate the course content to maximize the relevance of degree programs. 	
Challenges	
<ul style="list-style-type: none"> • Course descriptions and outcomes at colleges rarely align completely, and course for course transfers are not as common as we would like; and • Individual colleges tend to have flagship programs that cater to regional industry partners. 	

As a ShaleNET Affiliate, Stark State College has worked collaboratively with other ShaleNET institutions to established common core competencies through a series of Tristate Shale Summit Workgroup meetings. The group also cross-walked course competencies/skillsets to careers in oil and gas, advanced manufacturing, mechatronics, and other energy industry sectors where they are commonly needed (see **Attachment D**). The Ohio Department of Higher Education approved Transfer Assurance Guide (TAG) course format is optimal for maximum transferability, and the single Measurement and Mechatronics Technician articulation pathway will allow project partners to streamline TAG approval work where it can have the greatest impact. Courses in the 40-hour core of classes are prime candidates for TAG.

With a basic assumption that all partner schools feed the 14 credit-hour summer boot-camp, the ShaleNET Share Model proposed herein will result in incremental enrollment increases toward a theoretical maximum throughput of 80 students per calendar year and increased oil and gas postsecondary education offerings/enrollment as shown in **Table V**. Long-term annual enrollment will be much higher as the collaboration matures, cyclical student enrollment reaches annual capacity/sustainability and capacity issues are addressed. Collaboration is critical to develop the feeder pathway to the summer boot-camp, reduce costs, capital equipment redundancies and increase enrollment through education sharing outcomes.

At maturity the 14 credit-hour summer boot-camp will be offered in a five-class rotation format, shown below in **Table VII**, to accommodate up to 80 students each summer. The rotation below enables students to receive 1,500 contact minutes for PET102 (2 credit hour, lecture) and 4,500 contact minutes (1,500 lecture and 3,000 Instructor-led Lab) over 49 class meetings in the course of ten weeks.

Table VII: Summer Boot Camp Schedule

Monday		Tuesday		Wednesday		Thursday		Friday	
Class	Time	Class	Time	Class	Time	Class	Time	Class	Time
PET102	0800-0900	PET131	0800-0930	PET135	0800-0930	PET141	0800-0930	PET142	0800-0930
PET131	0900-1030	PET135	0930-1100	PET141	0930-1100	PET142	0930-1100	PET131	930-1100
PET135	1030-1200	LUNCH	1100-1200	Lunch	1100-1200	Lunch	1100-1200	Lunch	1100-1200
Lunch	1200-1300	PET141	1200-1330	PET142	1200-1330	PET102	1200-1300	PET135	1200-1330
PET141	1300-1430	PET142	1330-1500	PET102	1330-1430	PET131	1300-1430	PET141	1330-1500
PET142	1430-1600	PET102	1500-1600	PET131	1430-1600	PET135	1430-1600		

While reducing student time-to-completion from 24-months to 18-months, the project also generates significant student cost savings through the low tuition rates offered by the partnership. The median tuition for the project’s institutional partners is \$151.20. **Table VIII** below shows the 2015-16 tuition rates for each institution. When compared to the \$616.60 median full-time in-state undergraduate tuition and fee rates for Ohio’s four-year colleges, students can expect to save approximately \$465.40 per credit or \$27,924 for 60 credits of study per student (Five-year project enrollment: 368 x \$27,924=\$10,276,032).

Table VIII: Partner College Tuition Rates (per Credit-Hour)		
Stark State	Eastern Gateway	Hocking
\$153.60	\$117.00	\$183.00
<i>*Ohio Department of Higher Education. Data and Reports: Tuition and Financial Aid (Fall 2015)</i>		

Institutionally, the sharing of resources, equipment and facilities increases use of existing resources and mitigates the need for redundant assets. For example, replicating Stark State’s multi-million dollar Wellsite Training Center could be cost-prohibitive and inefficient. The Center will provide student and faculty access to fabrication equipment such as a metal lathe, end-mill, press-brake, shear, saws, punches, and MiG and TiG welding equipment. Faculty will also be able to check-out tooling and die equipment such as orifice plate, solar enclosure, and instrument enclosures for use at their home schools. Partner faculty and students can gain access to valuable technical hands-on lab training, Stark State can increase its cost-benefit outcomes for the Center and partners can promote a shared student services model that benefits everyone by sharing resources.

Overall, ShaleNET Share represents a new model of postsecondary education that promotes the best possible education for Ohio students while mitigating redundancy and promoting efficiency toward sustainability. It also creates new faculty development and curriculum standardization opportunities that have, until now, only been mildly successful. The Project Team seeks to realize the economic efficiency outcomes, shown in **Table IX**, through the ShaleNET Share pilot.

Table XI: ShaleNET Share Innovations in Postsecondary Education
A cross-functional adjunct pool comprised of full- and part-time faculty that can be deployed to staff the summer Boot-camp and develop partner college instructor knowledge. Use of an adjunct pool from various partner schools will facilitate collaboration and cross-pollination between programs. Relationships developed while collaborating in a mutually beneficial partnership are more persistent.
Efficient joint marketing of collaborative ShaleNET A.A.S. and certificate offerings to students, industry and other regional colleges, Career & Technical Centers and College Credit Plus programs.
Development of ShaleNET TAG courses/programs to promote transfer to other state institutions of higher learning as the courses on record and not as electives. Any crosswalks from workforce training or prior learning assessment will be able to be deployed at partner schools since the degree has been aligned in TAG or coursed by course articulations. This should lead to increased recruitment opportunities due to reduced time to completion and less student debt.
Implementation of blended course delivery modalities to enable access to coursework and laboratory equipment by the non-traditional and fully employed student. Create distance-learning opportunities to deliver ShaleNET programming through existing online learning management systems.
A Capstone Course that incorporates project-based learning elements and competencies spanning an array of skills including instrumentation, custody transfer, distribution, and regulatory aspects. The capstone course will parallel credit-based internship outcomes, providing an alternative pathway for students to do research and gain experiential learning toward program completion if internships are not readily available.

Existing petroleum lecture/lab courses adapted to a web-blended or web-essential modality consisting of online lecture with some required Well Site Training Center attendance. Additional modalities will allow greater access to ShaleNET programming not only in Appalachia but also to other shale plays within the country and a potential global market.

ShaleNET represents a stable long-term training pipeline for oil and gas and related industries in the Appalachian Basin. At Stark State alone, there are currently 85 declared petroleum majors and more than 120 unique individuals taking a class developed under the ShaleNET partnership. The college has identified a sustainability threshold of approximately 300 students for the ShaleNET programs. At that level, enrollment revenue should allow the ShaleNET Share program to self-support staff, instructors, equipment, laboratory consumables, and administrative overhead. The two-year 40/20 partnership will promote exponential enrollment increases at both Stark State and its partner institutions through expansion of ShaleNET A.A.S degree offerings into other areas of Ohio.

The project's sustainability plan seeks to ensure continuation of project goals, principles and efforts toward desired outcomes by achieving sustainable enrollment levels and identifying other local, state and federal funding sources to support project costs as needed. Stark State College and its partners have identified approximately \$158,758 in leveraged resources, including contribution from Stark State College, Chevron and Eastern Gateway Community College to cover partial costs for the Project Coordinator, advisors and scholarships. The Project Team will review the project design semi-annually to ensure that the goals of the project are consistent with current conditions and workforce development needs of the region.

III. Project Plan

Jean Barbato, ShaleNET Regional Hub Case Manager, will serve as the **ShaleNET Share Project Coordinator**. In this role, Jean will serve as the primary point of contact for the project. She will work with each applicant's home school advisor/faculty member to ensure that the progression of classes is consistent with completion metrics needed to transition students to the summer boot-camp. Jean will also work with partner colleges to establish the course delivery schedule each semester and coordinate scholarship opportunities. She will coordinate marketing and recruitment activities at SSC and other partner schools. Jean will also be responsible for cultivating long-term College Credit Plus relationships with high schools and career centers within the Utica play to enable future students to earn ShaleNET-

related college credit while in high school. Workshops will be developed for high school administrators and counselors to further their knowledge about the industry and career opportunities.

Dan Schweitzer, Coordinator for Oil and Gas programs at Stark State College, will serve as the primary point of contact for curriculum developers, adjunct and full-time faculty partners. He will coordinate the course content and delivery methods to ensure consistency and relevancy and serve as instructor as necessary. Dan will also interface with industry, partner colleges and government entities to build visibility and adoption of the ShaleNET Share A.A.S. degrees. Other duties include shepherding potential employers through the College Central Network account setup process and ensuring that job postings are disseminated to all program participants.

A **ShaleNET Share Curriculum Developer**, to be determined, will create and implement a new ShaleNET Capstone Course that incorporates project-based learning elements and competencies spanning an array of skills including instrumentation, custody transfer, distribution and regulatory aspects. The capstone course will parallel credit-based internship outcomes, providing an alternative pathway for students to do research and gain experiential learning toward program completion if internships are not readily available. The Curriculum Developer will adapt existing ShaleNET petroleum lecture/lab courses into web-blended or web-essential modality consisting of online lecture with some required Well Site Training Center attendance. This will impact eight existing courses. The additional modalities will promote greater access to ShaleNET programming not only in Appalachia but also to other shale plays within the country and a potential global market.

ShaleNET Share staff and faculty at partner institutions will collaborate with Stark State to develop TAG petroleum courses for approval through the Ohio Department of Higher Education. TAG designation will allow the courses to transfer to other Ohio institutions of higher learning as the courses on record and not as electives. The team will crosswalk standardized course objectives/competencies of the ShaleNET curriculum, allowing students to earn college credit while under the ShaleNET Share 40/20 model. The partnership will also collaboratively develop a shared services model and articulation that leverages the unique value-add of each institution. Competencies in programming at each college would have to be evaluated and cross-walked to ShaleNET.

IV. *Project Evaluation*

To conduct the required evaluation component of the grant, Stark State College and the ShaleNET Share consortium will work with a third-party evaluator, Social Policy Research Associates (SPR). SPR is well-positioned to conduct the evaluation as it is already the third-party evaluator for the current ShaleNET Trade Adjustment Assistance and Community College Career Training (TAACCCT) grant funded by the U.S. Department of Labor and thus already has a clear understanding of the ShaleNET model and its operation at Stark State. Since its founding in 1991, SPR has earned national recognition for its rigorous approach to evaluating higher education and vocational training programs for federal, state and local clients.

SPR proposes to conduct a formative and summative study of the ShaleNET Share consortium. The formative study will assess the implementation of the ShaleNET Share Program, surface operational and collaborative strengths and weaknesses of the project and report them back to ShaleNET Share at least annually so that the consortium can make mid-course corrections as needed. The summative study will focus on documenting and describing the key outcomes for the project, including participant academic achievement outcomes and reductions in funding and administrative expenditures. The specific outcomes the evaluation would measure for both evaluation components are described below.

Formative Measures

To assess the progress of implementation for the ShaleNET Share program, the formative portion of the evaluation will measure the following:

Overall Measures of Grant Implementation

- Completion of articulation agreements between the consortium colleges;
- Completion of curriculum and college/state approval of new courses;
- Enrollment by semester in the ShaleNET Share Program from each of the feeder colleges; and
- Extent of regular collaboration between consortium colleges, as measured by participation in consortium calls and meetings, and informal communication.

Interim Measures of Academic Achievement

- Completion of key academic milestones towards program completion and credential and degree attainment by student participants;

- Completion of the 10 week, 14 credit hour intensive summer semester;
- Completion of 30 credit hours; and
- Completion of the program's capstone course.

Summative Measures

To assess whether the ShaleNET Share Program has achieved its goals, the summative component of the evaluation will measure the following:

Academic Achievement by Participating Students

- Competencies achieved, as measured by course completion;
- Attainment of Petroleum Technology Measurement Career Enhancement Certificate or progress toward attainment as measured by credits earned and courses completed;
- Attainment of Associate of Science degree and/or progress toward attainment as measured by credits earned and courses completed; and
- Time to completion, as measured by time elapsed from enrollment to completion.

Expenditure Reductions

- Reductions in administrative expenditures at each of the feeder colleges to develop their own Petroleum Technology Measurement Program, as measured by documentation from Stark State; College staff regarding the administrative time required to develop needed curriculum, purchase and maintain needed equipment, and develop required partnerships with industry partners; and
- Reductions in funding needed to run a Petroleum Technology Measurement Program, as measured by documentation from Stark State College staff regarding the funding needed to purchase required equipment.

Evaluation Process

In order to assess the ShaleNET Share Project's success on each of these measures, as well as to document key challenges and promising practices related to their attainment, we will collect both qualitative and quantitative data throughout the grant's period of performance. We will collect qualitative data through annual phone interviews with representatives from each consortium college and a site visit during the second year of the grant to Stark State College during the summer intensive semester. During this site visit we will carry out a variety of data collection activities, including observations of classroom/lab

sessions, focus groups with students and instructors, interviews with the program's career counselor, and project director. In addition, SPR will review relevant grant-related documents and other materials on an on-going basis.

We will also collect quantitative data on an ongoing basis through the grant's period of performance, including data on participant enrollment, academic achievement and expenditure data. To collect the necessary student achievement data, Stark State will develop data sharing agreements with each consortium college to have each college provide Stark State with data on project participants from each college's student information system. Stark State and SPR will then negotiate a data sharing agreement for Stark State to provide SPR with those data from feeder colleges as well as data from Stark State's own data system. SPR will also work with the Stark State and other consortium members to create a template for the consortium to continue reporting these data to ODHE in the three years after the completion of the grant. To collect the expenditure data, SPR will work with relevant staff from Stark State College during the second year of the grant to obtain documentation of project development costs.

To provide the results from both the formative and summative evaluation components to both the ShaleNET Share Consortium and ODHE, SPR will produce both an interim report at the approximate midpoint of the grant and a final report just before the grant's conclusion. SPR will also present the results from both reports to consortium and ODHE staff members via webinar shortly after submission of each report.

Evaluation Implementation and Timeline

For purposes of managing this project evaluation, SPR has divided the project into six tasks and various subtasks as shown below. These are displayed graphically in **Chart II** on page 22 of this proposal.

- Task 1: Finalize research design. This task begins with a start-up meeting held shortly after grant award to refine the key research questions, and data collection and analysis tasks. As part of this task, we will also develop qualitative data collection instruments and gain IRB approval from Stark State.
- Task 2: Qualitative data collection. This task includes phone interviews with representatives from each college and a site visit to Stark State. The first round of phone interviews will take place during

the second half of 2016, while the second round will take place in late 2017. The site visit will take place during the second intensive summer semester in the summer of 2017.

- Task 3: Quantitative data collection. SPR will negotiate a data sharing agreement regarding student educational data with Stark State shortly after the grant's award and will then arrange to collect such data on a regular basis throughout the grant. SPR will collect expenditure data during the fall of 2017.
- Task 4: Interim report. SPR will produce an Evaluation Interim Report in the spring 2017 with a telephone briefing to the consortium following the report's submission.
- Task 5: Final Report. SPR will produce a Final Evaluation Report in the spring 2018 with a telephone briefing to the consortium just prior to finalization of the report.
- Task 6: Project Management. SPRs will conduct activities related to the management of the evaluation on an ongoing basis throughout the period of performance, including regular communication with Stark State via phone calls and progress reports.

Evaluation Team Qualifications

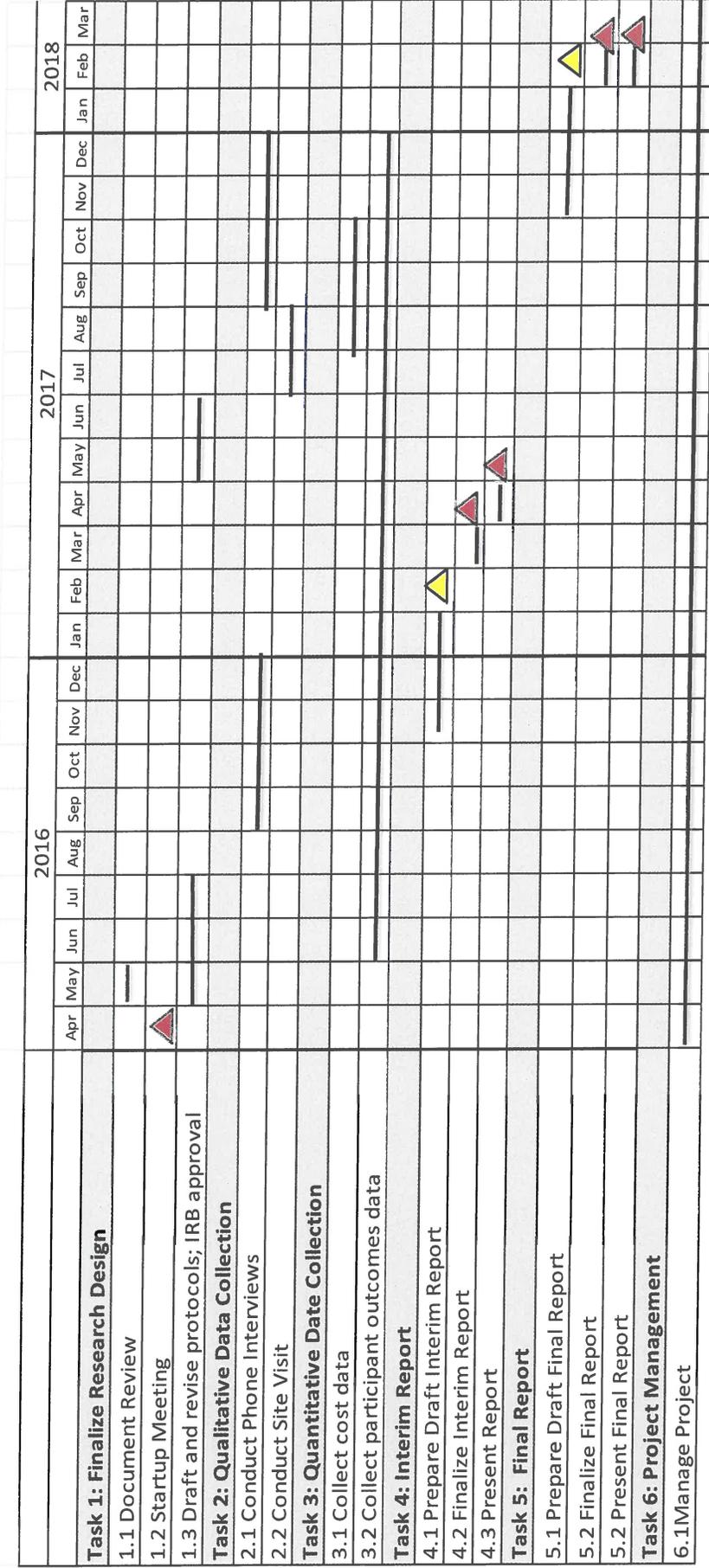
The evaluation team will be comprised of four staff members from SPR. Kate Dunham will serve as the senior advisor, Deanna Khemani will serve as the project manager and lead the qualitative data collection and analysis efforts, Ms. Leela Hebbar will lead the evaluation's quantitative data collection (participant outcomes and cost data) and analysis components. These three lead staff will be assisted by an SPR project assistant. Below is a description of the qualifications of the evaluation team's three lead staff members.

Ms. Kate Dunham (M.P.P., Public Policy, University of California at Berkeley) is a Senior Associate and the Director of the Workforce Development and Human Services Research and Evaluation Division at SPR. As the Division Director, Ms. Dunham leads all of the company's evaluations for TAACCCT-funded grants. She is one of SPR's senior researchers with more than 15 years of experience evaluating workforce development programs, and has served as project director on a number of community college projects, including the impact Evaluation of the ShaleNET TAACCCT Grant and USDOL's Technology-Based Learning Grants, which has helped her gain valuable experience leading IRB processes.

Ms. Deanna Khemani (M.A. Political Science, Northeastern University), Senior Associate, will serve as the project manager and lead analyst for the project. Ms. Khemani has over 15 years of experience working on state-specific education and workforce development evaluations, including her work as a site visitor for both the Evaluation of the Michigan Coalition for Advanced Manufacturing (M-CAM) TAACCCT Grant and Third Party Evaluation of ShaleNET U.S. TAACCCT Grant, where she served as the sole data collection expert for Stark State College. As part of her role under these evaluations, she has been responsible for conducting site-visit data collection, preparing qualitative analysis, and developing data sharing agreements with state agencies.

Ms. Leela Hebbar (Ph.D., Urban Planning and Policy Development, Rutgers University) is a Senior Associate at SPR. Ms. Hebbar has over 10 years of experience conducting research and evaluation to inform decision making in workforce development and higher education settings. Recently, Ms. Hebbar was the lead researcher in the evaluation of San Mateo County's Workforce Innovation Fund Grant, which included outcome studies of pilot programs designed to help English learners advance on their career pathways. She is currently the lead analyst for the quantitative data related to the Third Party Evaluation of ShaleNET U.S. TAACCCT Grant, from which the ShaleNET Share project builds its curriculum.

Chart II – Evaluation GANTT Chart



V. **Budget Narrative**

Budget Narrative: ShaleNET Share Project			
	Description	ODHE Funds	Leveraged Funds
Equipment			
FlowBoss Mechatronics Trainer (Eastern Gateway and Hocking College)	The FlowBoss Mechatronics Trainer is a packaged unit that includes a local flow computer, Orifice Plates, Resistive Thermal Devices, Turbine Metering, Multi-variable Sensors and Tubing. This equipment will enable partner colleges to teach American Gas Alliance 3 and 7 Flow Metering and Custody Transfer. Stark State will provide partner colleges with four units each (8 total) to advance their PLC, Sensor, Instrumentation and Mechatronics offerings to align proficiencies with ShaleNET requirements. Each unit is priced at \$5,000 each.	\$40,000	
Open Enterprise Licenses (Stark State College)	The Enterprise Licenses support Web4 access to the Oil and Gas Training Lab at Partner Institutions. The seat licenses will be managed by Stark State for the use of partner institutions. The project seeks to secure 16 concurrent-use seat licenses at \$1,200 per license	\$19,200	
Open Enterprise Distributed SCADA system (Stark State College)	The project will purchase two Open Enterprise systems to enable partner institutions to run simulated and actual process control environments through a remote terminal. This units will talk to lab media runs and instrumentation to monitor and maintain actual PLC processes. Each unit is priced at \$25,484 to be covered by ODHE funds	\$50,968	
Personnel			
Project Coordinator (Stark State College)	Jean Barbato will serve as the ShaleNET Share Project Coordinator (see job description on pages 14-15 of this proposal). As Project Coordinator, Ms. Barbato will be paid a base salary of \$43,068 in Year-one and \$44,145 in Year-two (includes for a 2.5% cost of living increase). Fringe benefits of 16 percent for Workers Compensation (.00397%), FICA (.0145%), Retirement (.14%). Health and dental benefits will also be provided at 85% of cost or \$17,383.76 in year one and \$19,122 in year two to account for annual insurance rate increases. Project Coordinator salary costs will be split between ODHE grant funds and other outside local funds.	\$100,162	\$34,377

Coordinator of Oil and Gas Programs <i>(Stark State College)</i>	Dan Schweitzer currently serves as the College's Coordinator for Oil and Gas programs. Mr. Schweitzer will assist Ms. Barbato in implementing the ShaleNET Share project (see page 15). The College will allocated 50 percent of Mr. Schweitzer's base salary, fringe and health benefit costs (valued at \$87,100 annually) to support the project in years one and two.		\$87,100
ShaleNET Share Advisors <i>(Eastern Gateway CC and Hocking College)</i>	ShaleNET Share Advisors are oil and gas faculty that will work collaboratively with Stark State to develop TAG course modules and implement the 40/20 shared education model. They will serve as the primary point of contact for the Project Coordinator. The project team has allocated \$15K per year for each institution to cover 20% of faculty time and effort to serve as Advisors. Eastern Gateway has included \$9,307 in administrative services as leveraged funds for this project.	\$60,000	\$9,307
Adjunct Instructors - Summer Intensive Program <i>(Stark State College)</i>	Five adjunct instructors (x 2 summers) from partner institutions and be provided supplemental contracts by Stark State to teach oil and gas technical courses during the 10-week summer intensive program. Four of the instructors will be paid the SSC adjunct rate of \$3,198 to teach four contact hour courses and one will be paid \$1,648 to teach a two contact hour course. The Project team will apply adjunct costs to the grant during years one and two while the project is under development.	\$28,880	
Facilities			
Supplies			
Purchased Services			
Curriculum Developer (To Be Determined) <i>(All Institutions)</i>	This contracted service provider from outside Stark State will work with the project team/partners to establish TAG course curriculum for submission to ODHE and HLC. The project will subcontract the work at a rate \$40 per hour for a total of 875 hours (110 days) of work. The work may be divided across several industry subject-matter experts with education experience.	\$35,000	
Summer Program Housing <i>(Malone University)</i>	Because of the timing of the 24-month project period and the implementation of summer sessions, Stark State College anticipates being able to serve 24 students in the year-two summer intensive. Malone University has agreed to provide housing	\$62,400	

	and meals (Mon-Thu) for ten-weeks (40 nights per student) at a rate of \$20 per student/day (rooms) and \$12.50 per student/day (meals) or \$32.50 per student/day.		
External Evaluator <i>(Social Policy Research Associates (SPR))</i>	The Project Team will engage SPR to prepare and provide annual evaluation services. SPR brings special value-add to the project because they have also served as the evaluator for the ShaleNET U.S. project funded by DOL and have experience with the ShaleNET outcomes and corrective actions. The evaluator will work with the project team to develop annual reports, assessment and corrective action plans.	\$50,000	
Expanded Network Bandwidth for Wellsite Training Center	The expanded up and downstream bandwidth requested herein supports partner college access to the Wellsite Training Center systems and sustain increased external demand on our systems from partners. The expanded bandwidth costs \$400 per month for the 24-month project period.	\$9,600	
Travel			
Outreach (Mileage)	Stark State College, through outside local funds, will support a portion of travel costs for this project as leveraged funds. A total of \$2,000 will be set aside in the grant funds to support outreach to existing partners and other Appalachian Basin College. Mileage will be paid at the Federal rate of 0.55 cents per mile.	\$2,000	\$1,267
Building Improvements			
Other (Describe)			
Scholarships <i>(All Institutions)</i>	The Project Team would offer \$1,500 scholarships to the 48 anticipated students to be served in years one and two of the project.	\$72,000	
Print Materials	The project will provides on-campus ShaleNET-related materials to partner institutions. This budget sets aside \$5,000 per institution for these materials	\$10,000	
Marketing <i>(All Institutions)</i>	The ShaleNET Share partners will work collaboratively with the Stark State College Marketing Department to develop and implement a three-county marketing plan. The Colleges Director of Marketing needs to include print (\$15K), outdoor (\$20K), radio (\$18K) and digital/online (\$8K) per year to saturate the three market areas. These costs will be paid through the ODHE grant funds in the first two years with a supplemental \$13,500 in leveraged funds	\$122,000	\$13,500

	to cover any costs for use of outside firms to develop marketing materials.		
SUBTOTAL DIRECT COSTS		\$662,210	\$145,551
Indirect Costs	Indirect costs will be charged to the ODHE grant funds at eight percent of direct costs. Stark State College has a negotiated Federal Indirect Cost Rate of 48% of Salary and Fringe. The difference between the two rates will be included in this proposal as leveraged funds.	\$52,977	\$13,207
TOTAL DIRECT/INDIRECT		\$715,187	\$158,758



SHALENET SHARE CONSORTIUM AGREEMENT

For the purposes of this project, an education consortium is an association of two or more school districts, school buildings, community schools or STEM schools pooling resources to share human and material assets and link academic and administrative resources with the objective of participating in the development and execution of a ShaleNET Share grant application to the Ohio Department of Higher Education – Education Innovation Program. A grant application submitted by an education consortium uses the shared resources of its members to achieve the goals of the grant application through cooperative purchasing, course sharing, professional development, information technology integration and/or faculty and staff networking. Unlike a partnership, each member of an education consortium is responsible for ensuring the ShaleNET Share grant application is developed and executed according to the terms of the grant agreement with the Ohio Department of Higher Education. Like individual grant applicants, an education consortium can partner with educational stakeholder(s) via a Partnership Agreement to accomplish the goals of the grant application.

In order to ensure the effective implementation of the ShaleNET Share project throughout the Appalachian region and Utica Shale Play, each education consortium must identify its members and attach a description of their respective roles and responsibilities. Additionally, a separate description regarding the nature of the partnership must be submitted for any educational stakeholder(s) partnering with the education consortium.

Each member of the education consortium is responsible for the following assurances:

1. Be knowledgeable about the consortium’s ShaleNET Share grant proposal and application, including advocacy of the ShaleNET Share program.
2. Sign and accept this Education Innovation Fund Program Grant Assurances.
3. Maintain familiarity with the consortium’s members and services to enhance the proposal, including specific goals and practices.
4. Demonstrate a commitment to clear roles and responsibilities of each consortium member as it relates to the grant proposal and application.
5. Sustain consistent communication among consortium members and stakeholders with a shared vision of the goals of the grant proposal. This includes participating in regularly scheduled meetings for project management and identifying areas for improvement.
6. Ensure consortium members have appropriate access to data for purposes of grant program improvement and evaluation in accordance with state and federal law.
7. Assist in the development of a clear project management plan to sustain the grant project over time.

Education Consortium Signatures

	<u>Lead Applicant/Consortium Member</u>
Name:	<u>Para M. Jones, Ph.D.</u>
Title:	<u>President</u>
Name of Institution:	<u>Stark State College</u>
IRN#:	<u>063420</u>
Address:	<u>6200 Frank Avenue NW</u>
City:	<u>North Canton</u>
State:	<u>OH</u>
Zip:	<u>44720</u>
Phone:	<u>330-494-6170, ext. 4259</u>
Email:	<u>pjones@starkstate.edu</u>
Signature:	<u><i>Para M Jones</i></u>
Date:	<u>3/7/16</u>

	<u>Consortium Member</u>
Name:	<u>Jimmie Bruce, Ed.D.</u>
Title:	<u>President</u>
Name of Institution:	<u>Eastern Gateway Comm. College</u>
IRN#:	<u>063453</u>
Address:	<u>4000 Sunset Boulevard</u>
City:	<u>Steubenville</u>
State:	<u>OH</u>
Zip:	<u>43952</u>
Phone:	<u>740-266-0801</u>
Email:	<u>jbruce@egcc.edu</u>
Signature:	<u><i>Jimmie Bruce</i></u>
Date:	<u>3/7/16</u>

Attachment A: Partner Letters of Commitment



Consortium Member

Name: Betty Young, Ph.D., JD, LL.M
Title: President
Name of Institution: Hocking College
IRN#: 063339
Address: 3301 Hocking Parkway
City: Nelsonville
State: OH
Zip: 45764
Phone: 740-753-7004
Email: youngb@hocking.edu
Signature: 
Date: 3/1/14



March 9, 2016

Mr. John Magill
Assistant Deputy Chancellor, Economic Advancement
Ohio Board of Regents
25 South Front Street
Columbus, OH 43215

Dear Chancellor Magill:

Stark State College is pleased to submit the attached proposal for funding consideration under the Ohio Department of Higher Education's Education Innovation Program. Through this project, Stark State will pilot the ShaleNET Share collaborative education project with Eastern Gateway Community College, Hocking College and others. This project will enable Ohio two-year colleges to offer ShaleNET oil and gas education through a program sharing arrangement with Stark State. The College firmly believes that innovative approaches to education are fundamental to Ohio's efforts to create educational excellence and economic efficiencies that promoting student access and success. Through this project, Stark State will lead the development and implementation of a replicable education model that promotes curriculum alignment, creation of TAG degree programs, sharing of cost-prohibitive equipment and facility resource, reductions in time-to-completion and enhancement of education offerings across Ohio.

Stark State College has served as a ShaleNET Affiliate Hub since 2013. As an affiliate, the College has invested more than \$3.7 million to develop oil and gas training programs and state-of-the-art lab facilities. Through this project, Stark State will work collaboratively with other two-year colleges in Ohio to pilot a 40/20 shared education program where students will complete core curriculum at their home institution and 20 credit hours of ShaleNET oil and gas education via web-4 and "Friday Fast Track" on-site education at Stark State College's ShaleNET Wellsite Training Center. Upon completion of the program, students will receive an A.A.S. degree from their home institution and a ShaleNET Petroleum Technology Measurement Certificate from Stark State College. Stark State and its partners will work collaboratively to align curriculum and establish articulation agreements that supports the shared education arrangement. For the long term, the College will work with the collaborative to design a TAG courses/Petroleum Technology Degree programs in Ohio. The ShaleNET Share concept promotes increased enrollment through expanded education program offerings; efficient use of student support, equipment and other capital resources; and standardization of oil and gas education in Ohio. To support this project, the College will commit in-kind leveraged resources of \$87,000 representing ten percent of the College's Oil and Gas Director's time for project oversight and other industry-awarded funds to offset the cost of the Project Coordinator.

A dedicated team of College administrators and faculty have already begun to collaborate on the training component design and look forward to working with you and your team on this important project should the Ohio Department of Higher Education select this proposal for funding. Please let me know if you have any questions regarding this letter or the information contained herein.

Sincerely,

Para M. Jones, Ph.D.
President

Attachment A: Partner Letters of Commitment



Jefferson County Campus

4000 Sunset Boulevard
Steubenville, OH 43952

740.264.5591
800.68.COLLEGE
www.egcc.edu

March 9, 2016

Dr. Para Jones
President
Stark State College
6200 Frank Avenue NW, Suite S203
North Canton, OH 44720

Dear Dr. Jones:

Eastern Gateway Community College (EGCC) is pleased to submit this letter of commitment to partner with Stark State on a collaborative education project that would enable ShaleNET-related oil and gas programs to be offered at Ohio colleges through a program sharing arrangement. The College firmly believes that innovative approaches to education are fundamental to Ohio's efforts to create educational excellence and economic efficiencies that promoting student access and success. Through this collaboration, EGCC will participate in the development and implementation of a replicable education model that promotes curriculum alignment, creation of TAG degree programs, sharing of cost-prohibitive equipment and facility resource, reductions in time-to-completion and enhancement of education offerings across Ohio.

Eastern Gateway currently offers a number of fields of study related to energy and engineering, including but not limited to an Oil & Gas Industry Operations & Maintenance Certificate, an Associate Degree in Natural Gas Operations, Programmable Logistics Controller Certificate, an Associate Degree and Certificate in Welding, an Associate of Technical Study Degree in Industrial/Manufacturing Trades Technology, an Associate Degree in Advance Machining and an Associate Degree in Mechanical Engineering Technologies. Through this project, the College will work collaboratively with Stark State College to develop a 40/20 shared education program where students can complete core curriculum at EGCC and 20 credit hours of ShaleNET oil and gas education with Stark State College through a blended learning format. Upon completion of the program, students will receive an Associate Degree from EGCC and a ShaleNET Petroleum Technology Measurement Certificate from Stark State College. Eastern Gateway will work with Stark State to align curriculum and establish an articulation agreement that supports the shared education arrangement. For the long term, the College will work with the collaborative to design TAG courses/Petroleum Technology Degree programs in Ohio. The ShaleNET Share concept promotes increased usage of existing oil and gas laboratories and alleviates the need for each school to construct a \$3.5 million ShaleNET oil and gas training lab. As a collaborative partner, Eastern Gateway will provide in-kind time and effort in the amount of \$9,307.57, representing 8% percent of salary and fringe costs for the Vice President for Administrative Services.

A dedicated team of College administrators and faculty have already begun to collaborate on the training design and look forward to working with you and your team on this important project should the Ohio Department of Higher Education select this proposal for funding. Please let me know if you have any questions regarding this letter or the information contained herein.

Sincerely,

A handwritten signature in black ink, appearing to read "Jimmie Bruce".

Jimmie Bruce, Ed. D.
President

cc: John Magill, Ohio Department of Higher Education

Attachment A: Partner Letters of Commitment



March 1, 2016

L. Caroline Maloney
Strategic Grants Development Officer
Stark State College
6200 Frank Avenue NW, Suite S306-H
North Canton, OH 44720

Dear Caroline:

Malone University is pleased to offer summer housing (last two weeks of May, June, and July) 2016 and 2017 for the ten-week intensive summer oil and gas program that you will be offering at Stark State College. The first two weeks of August are not available for housing.

Malone University will provide air conditioned housing to accommodate sixteen (16) students in single sleeping rooms with a semi private restroom facility (two people share a restroom) for \$100.00 per week per person. Each room consists of a twin bed, desk, chair, dresser, and closet. All residence hall housing has free wireless internet, cable, laundry facilities, and parking.

Malone University is looking forward to collaborating with Stark State College to provide housing for the intensive summer oil and gas program for 2016 and 2017.

Sincerely,

A handwritten signature in black ink, appearing to read 'Cindy Lundin', is written over a light blue horizontal line.

Cindy Lundin
Events Coordinator
Malone University

Attachment B: Proposed Petroleum Technology Instrumentation and Measurement Technician A.A.S Curriculum Sheet

 	<p>ASSOCIATE OF APPLIED SCIENCE Proposed PETROLEUM TECHNOLOGY MEASUREMENT & MECHATRONICS TECHNICIAN MAJOR</p> <p><i>The catalog in force is assigned to students based on the academic year they first applied to the college, and changes only when students change their major or request the change in writing.</i></p>	<p>Proposed Effective Summer 20</p>
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Engineering Technologies Division

Oil and Gas Technology Department

TECHNICAL Course Number	Course Title	Credits	Pre- and Co-Requisites	Completed Sem./Year
EST230	Electrical Circuits and Devices [^]	4	[(MTH093 and MTH094)+ or Proficiency] or MTH107	
ARI.234	Gas Compression and Flow Dynamics	3		
PET132	Petroleum Instrumentation	3	EST230 and (CHM101 or ARI.234)	
MST221	Mechanical Drive Component	3		
PETXXX	Petroleum Process Controls	3		
EET227	PLCs and Industrial Controls I	3	EET120 or EST230	
PET102	Introduction to Supervisory Control and Data Acquisition (SCADA)	2		
PET131	Corrosion Basics	3		
PET135	Measurement & Basic Pipeline Operations	3		
PET141	Production Operations	3		
PET2XX	Petroleum Capstone Course	3		
Total		33		
NON-TECH Course Number	Course Title	Credits	Pre- and Co-Requisites	Completed Sem./Year
SSC101	Student Success Seminar ^{^^}	1	<i>Take first semester</i>	
PET101	Introduction to the Petroleum Industry	3		
ITD122	Computer Applications for Professionals [^]	3	ITD100 or Proficiency	
CHM101	Introduction to Chemistry [^] [^]	4	(MTH093 and MTH094) ⁺⁺ or Proficiency	
MTH107 or MTH125	Industrial Math or College Algebra [^] ^Ω	3 Or 4	(MTH091 and MTH092) ⁺⁺ or (MTH093 and MTH094) ⁺⁺ or Proficiency	
ENG124	College Composition [^]	3	ENG011 or Proficiency	
ENV221	OSHA 40-Hour HAZWOPER	2		
COM121 or COM122	Effective Speaking or Interpersonal Communication	3		
MST121 or DET125	Blueprint Reading or Basic AutoCAD	2 or 3		
	<i>Select one (1) Social & Behavioral Sciences or Arts & Humanities Elective from the list below</i>	3	<i>Check for prerequisites</i>	
Total		27 or 28or29		
TOTAL CREDIT HOURS		60 or 61or62		

[^]Based on SSC placement scores
^{^^}To promote student success, this course should be taken in the first semester
⁺Minimum grade of "B" required
⁺⁺Minimum grade of "C" required
^ΩMTH125 should be taken by students planning to transfer to a four-year institution

Attachment B: Proposed Petroleum Technology Instrumentation and Measurement Technician A.A.S Curriculum Sheet

^ Because of strong emphasis on science in this major, applicants must have successfully completed Chemistry and Biology in high school. Students who did not complete the courses in high school, and those who prefer to refresh their knowledge of the material, should complete the listed pre-requisites.

*Social & Behavioral Sciences or Arts & Humanities electives: BUS122, BUS221, BUS222, PSC121, PSY121, PSY122, PSY123, PSY124, PSY220, PSY221, SOC121, SOC122, SOC123, SOC221, SOC225, ENG233, ENG234, ENG236, ENG237, HIS121, HIS122, HIS221, HIS222, PHI122 (recommended)

[Keywords]	ASSOCIATE OF APPLIED SCIENCE Proposed PETROLEUM TECHNOLOGY MEASUREMENT & MECHATRONICS TECHNICIAN MAJOR	[Category]
Proposed Effective Summer 20[status]		

FULL-TIME STUDENT ADVISING NOTES

Academic Advising

Students should make an appointment to see their advisor before registering for classes each semester. They should have prepared a completed registration form, including courses they wish to take, prior to this meeting.

Course Sequence

The semester-by-semester listing below provides the normal scheduling option for full-time associate degree students who plan to finish in two years.

<u>First Semester</u>		<u>Credit Hours</u>	<u>Pre- and Co-requisites</u>
SSC101	Student Success Seminar^^	1	Take first semester
ENG124	College Composition^	3	ENG011 or Proficiency
PET101	Introduction to the Petroleum Industry	3	
ARL234	Gas Compression and Flow Dynamics	3	
BST230	Electrical Circuits and Devices^	4	[(MTH093 and MTH094)+ or Proficiency] or MTH107
ITD122	Computer Applications for Professionals^	3	ITD100 or Proficiency
		17	
<u>Second Semester</u>	<u>10 Week Summer Intensive</u>		
PET102	Introduction to Supervisory Control and Data Acquisition (SCADA)	2	
PET131	Corrosion Basics	3	
PET135	Measurement & Basic Pipeline Operations	3	
PET141	Production Operations	3	
PETXXX	Petroleum Process Controls	<u>3</u>	
		14	
<u>Third Semester</u>			
EET227	PLCs and Industrial Controls I	3	EET120 or EST230
PET132	Petroleum Instrumentation	3	EST230 and (CHM101 or ARL234)
MST221	Mechanical Drive Components	3	
MST121 or DET125	Blueprint Reading or Basic AutoCAD	2 or 3	ITD100 or Proficiency
PET2XX	Petroleum Capstone Course	<u>3</u>	ENG011 or Proficiency
		14 or 15	
<u>Fourth Semester</u>			
MTH107	Industrial Math	3	(MTH091 and MTH092)++
or	or	Or	or
MTH125	College Algebra^Ω	4	(MTH093 and MTH094)++ or Proficiency
CIEM101	Introduction to Chemistry^▲	4	(MTH093 and MTH094)++ or Proficiency
COM121 or COM122	Effective Speaking or Interpersonal Communication	3	
ENV221	OSHA 40-Hour HAZWOPER	2	
	Select one (1) Social & Behavioral Sciences or Arts & Humanities Elective from the list below	<u>3</u>	Check for prerequisites
	TOTAL CREDITS	16 or 17 60 or 61 or 62	

Attachment C: ShaleNET Course Crosswalk for Partner Institutions

		ShaleNET Share					
		Partner Course Crosswalk			Partner College Course Equivalent		
		Petroleum Technology Measurement A.A.S.					
Stark State College Course Number	Course Title	Credits	Belmont College	Eastern Gateway Community College	Hocking College	Washington State Community College	Zane State College
Technical Courses							
EST230	Electrical Circuits & Devices	4	EIE1101	ELE101	ISE2210	ELET1110	EEET1100
ARL234	Gas Compression and Flow Dynamics	3	NA	NA	NA	NA	NA
PET132	Petroleum Instrumentation	3	EIE2315	ELE207	ISE2210	MECH2150	EEET2210
MST221 or MST134	Mechanical Drive Components or Hydraulics & Pneumatics	3	ECE1160	MCH102	NA	MECH2230	MECH2500
PETXXX*	Petroleum Process Controls	3	NA	NA	NA	NA	NA
EET227	PLCs and Industrial Controls	3	EIE2210	ELE214	NA	ELET2410	EEET2510
PET102	Introduction to Supervisory Control and Data Acquisition (SCADA)	2	NA	NA	NA	NA	NA
PET131	Corrosion Basics	3	NA	NA	NA	NA	NA
PET135	Measurement & Basic Pipeline Operations	3	NA	NA	NA	NA	NA
PET141	Production Operations	3	NA	NA	NA	NA	NA
PET2XX*	Petroleum Capstone Course	3	NA	NA	NA	NA	NA
TECHNICAL CREDITS SUBTOTAL		33					

Attachment C: ShaleNET Course Crosswalk for Partner Institutions

Non-Technical Courses									
SSC101	Student Success Seminar	1	FYE1110	CSS106		GS1000	PERS1003		FYEX1010
PET101	Introduction to the Petroleum Industry	3	NGT1101	NGT101		PET1101	INDT1020		OGET1010
ITD122	Computer Applications for Professionals	3	CPT1100	GSC107		MICS1141	BUSM1600		BMCA1050
CHM101	Introduction to Chemistry	4	CHM1112	CHM101		CHEM1101	CHEM1200		CHEM1010
MTH107 or MTH125	Industrial Math or College Algebra	3 4	MAT1125 or MAT1130	MTH095 or MTH120		MATH1113	MATH1104 or MATH2130		MATH1240
ENV221	OSHA 40-Hour HAZWOPER	2	FST1116	NGT131		GEN2225	INDT1210		EVNS2550
COM121 or COM122	Effective Speaking or Interpersonal Communication	3	COM1110 or COM1115	COM101		COMM1130	SPCH1510 or SPCH2060		COMM2610 MECH2650 or other
MST121 or DET125	Blueprint Reading or Basic AutoCAD	2 3	ECE1120	DES115		DD1114	DRFT1410		
Electives	Social & Behavioral Sciences or Arts and Humanities Elective	3							
	NON-TECHNICAL CREDITS SUBTOTAL	24 or 26							
	*Courses to be developed by Stark State College for Petroleum Technology Measurement Certificate.								
	☐ = ShaleNET courses taught by Stark State College as part of Petroleum Technology Measurement Certificate.								
	Core requirement in all college curriculum.								

Attachment D: Industry Sector Crosswalk of Oil and Gas Skills and Competencies

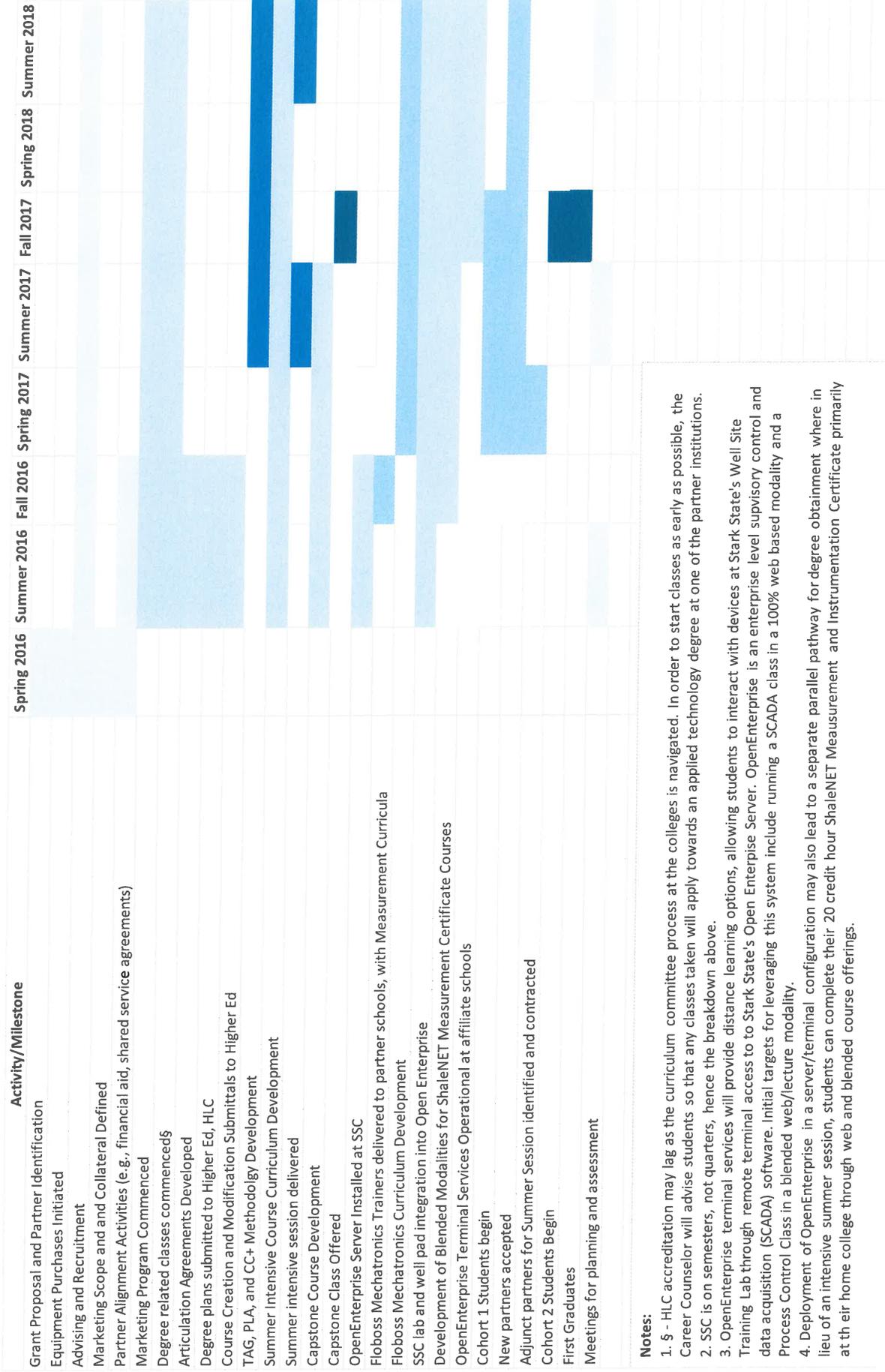
Analysis of Skills and Competencies
Core Industries Related to Oil and Gas Development
Appalachian Basin

NAICS Codes & Description of Industry Workshed	Flow Measurement/ Totalizing	Sensors: Pressure, Level, and Temperature	Sensors: Proximity/ Robotics Control	Process Control	SCADA	PLC	Prime Mover	Hydraulics Pneumatics	AC/DC
MANUFACTURING									
3241 Petroleum and Coal Products	X	X		X	X	X	X	X	X
3251 Basic Chemicals	X	X		X	X	X	X	X	X
3252 Resins and Synthetic Rubbers, Fibers, and Filaments	X	X		X	X	X	X	X	X
3253 Pesticides, Fertilizers, and Other Agr. Chemicals	X	X		X	X	X	X	X	X
3254 Pharmaceuticals and Medicine	X	X	X	X	X	X	X	X	X
3259 Other Chemical Products	X	X	X	X	X	X	X	X	X
3271 Clay Products	X	X		X	X	X	X	X	X
3279 Other Nonmetallic Mineral Products	X	X		X	X	X	X	X	X
3311 Iron, Steel, and Ferroalloys	X	X		X	X	X	X	X	X
3313 Aluminum Production and Processing	X	X		X	X	X	X	X	X
3315 Foundries	X	X		X	X	X	X	X	X
3331 Agr., Construction, and Mining Machinery		X	X	X	X	X	X	X	X
3332 Industrial Machinery		X	X	X	X	X	X	X	X
3333 Commercial and Service Industry Machinery		X	X	X	X	X	X	X	X
3336 Engines, Turbines, and Power Trans. Equipment		X	X	X	X	X	X	X	X
3339 Other General Purpose Machinery		X	X	X	X	X	X	X	X
3341 Computers and Peripheral Equipment		X	X	X	X	X	X	X	X
3342 Communications Equipment		X	X	X	X	X	X	X	X
3343 Audio and Video Equipment		X	X	X	X	X	X	X	X
3344 Semiconductors and Other Electronic Components		X	X	X	X	X	X	X	X
3345 Navigation, Measurement, and Control Instruments		X	X	X	X	X	X	X	X
3353 Electrical Equipment		X	X	X	X	X	X	X	X
3359 Other Electrical Equipment and Components		X	X	X	X	X	X	X	X
ENERGY									
2111 Oil and Gas Extraction	X	X		X	X	X	X	X	X
2122 Metal Ore Mining	X	X		X	X	X	X	X	X
2211 Electric Power Generation, Trans., and Distribution	X	X		X	X	X	X	X	X

Notes:

- SCADA = Supervisory Control and Data Acquisition
PLC = Programmable Logic Controllers
AC/DC = Alternating Current/Direct Current
I&E = Instrumentation and Electronics
Prime Movers = motive force providers such as pumps, pulleys, and associated motors
- Columns Highlighted in Green indicate classes or coursework currently contained in ShaleNET programs: Mechatronics, Process Operation, and Instrumentation and Electronics pathways.
- Column Highlighted in Red is not typically covered in detail in Oil and Gas Industry production, transportation, or processing.

Attachment E: ShaleNET Share GANTT Chart



Notes:

1. \$ - HLC accreditation may lag as the curriculum committee process at the colleges is navigated. In order to start classes as early as possible, the Career Counselor will advise students so that any classes taken will apply towards an applied technology degree at one of the partner institutions.
2. SSC is on semesters, not quarters, hence the breakdown above.
3. OpenEnterprise terminal services will provide distance learning options, allowing students to interact with devices at Stark State's Well Site Training Lab through remote terminal access to Stark State's Open Enterprise Server. OpenEnterprise is an enterprise level supervisory control and data acquisition (SCADA) software. Initial targets for leveraging this system include running a SCADA class in a 100% web based modality and a Process Control Class in a blended web/lecture modality.
4. Deployment of OpenEnterprise in a server/terminal configuration may also lead to a separate parallel pathway for degree obtainment where in lieu of an intensive summer session, students can complete their 20 credit hour ShaleNET Measurement and Instrumentation Certificate primarily at their home college through web and blended course offerings.

Attachment F: References

References

- ⁱ American Association for Higher Education. "New Agenda on School/College Collaboration," AAHE Bulletin. Vol. 45(9), pgs. 10-13. May 1993.
- ⁱⁱ Wilbur, F.P. & Lambert, L.M. "Linking America's Schools and Colleges: Guide to Partnerships & National Directory (2nd ed.). Washington, DC. American Association for Higher Education. 1995.
- ⁱⁱⁱ Cuseo, Joe. "Collaboration Between Schools & Colleges, aka, School-College Partnerships." *Perspectives* 5.1 (2008): 4A-11A.
- ^{iv} Springer, Leonard et al. "Effects of Small-Group Learning on Undergraduates in Science, Mathematics, Engineering and Technology: A Meta-Analysis." Research Monograph No. 11. University of Wisconsin-Madison, National Institute for Science Education. (1997).