**Project Title:** Simulation in Diagnostic Medical Sonography Education
**Project Applicant:** Misericordia University
- *Point of Contact: Larry Pellegrini*
- *Agency Address: Misericordia University 301 Lake St, Mercy Hall, Dallas, PA 18612*
- *Telephone Number: (570) 674-6307*
- *Email Address: lpellegrini@misericordia.edu*

**Counties Served**: Transitional counties served are: Carbon, Columbia, Lackawanna, Luzerne, Lycoming, Monroe, Schuylkill, Wayne, and Wyoming.
Census Tracts: 2112.04, 2118, 2001, 2004, 2005, 2011, 2013, 2014, 2015, 2016, 2173, 2174, 2113.03, 2113.01, 2113.02, 1006, 1003, 1107, 1111, 1115, 3009, 3006, 9067, 9066, 206, 201.02, 203, 507, 506, 512, 4007, 4002, 4005, 4003, 40047, 18, 17, 20, 21, 16, 33

**Goal/Strategy: ARC Goal 2** – Increase the education, knowledge, skills and health of residents to work and succeed in Appalachia, **ARC Objective 4 –** Increase residents' access to STEAM and other skills training on state-of-the-art technology and processes across all educational levels. **PA Goal 2: Ready Workforce-** Improve the education, knowledge, skills and health of residents to work and succeed in Appalachia. **PA Objective 2.2:** Appalachian residents will receive advanced skills training to acquire and maintain family-sustaining jobs. **PA strategy 2.2.3-** Promote the use of high technology tools and resources for the education of students as a means to deliver workforce training.

**Purpose**: To purchase state of the art simulation-based Sonography lab equipment that can best prepare students in the Diagnostic Medical Sonography certificate program to transition into their clinical requirements and ultimately connecting them to a health-related career path.

**Funding**:

| Source | Non-Construction Activity | Equipment | Construction | Total | Percent | Status of Funds |
|---|---|---|---|---|---|---|
| ARC: | | $70,000 | | $70,000 | 50% | Pending |
| Misericordia U/Other: | | $70,000 | | $70,000 | 50% | Committed |
| **TOTAL** | | **$140,000** | | **$140,000** | **100%** | |

**Project Description**:  The Diagnostic Medical Sonography Certificate Program at Misericordia is specifically designed to assist individuals looking to change or enhance their career and/or increase their income through a short-term program preparing for careers as sonographers. Students are educated through classroom, simulated laboratory, and clinical engagement, and assessment activities. During the first six months of the curriculum and within each semester, students are engaged in required simulated lab activities which prepare them to engage in on the job clinical setting training on real patients during diagnostic sonographic (ultrasound) examinations. Technology within this discipline is ever-changing. Providing our students access to state-of-the-art equipment similar to that used in professional settings allows for instruction on equipment operation and the features available to create optimal images with a variety of body habitus.

The Diagnostic Medical Sonography (DMS) Certificate program at Misericordia was initiated in 2003. To date, 203 students have graduated with certificates. Furthermore, 76% of certificate recipients have remained in Pennsylvania to continue their professional careers. Forty-nine percent of Misericordia DMS graduates have stayed in Northeastern Pennsylvania. Historically, 96% of the graduates successfully completed the national American Registry of Diagnostic Medical Sonography (ARDMS) credential exams with first time pass rate average exceeding 90% in the Sonography Physics exam, Abdomen specialty exam and OB/GYN specialty exam. Using the data from the past five years, the first-time pass rate is 100% for Physics, 99% for Abdomen and 95% for OB/GYN. These first-time pass rates far exceed the national averages for ARDMS exams, indicating the high-quality education the students receive.  The program requires 48 sonography-specific course credits and takes participants approximately two years to complete. The program is unique in that on-campus classes are held every other weekend with attendance at clinical occurring during the week for one full year. This allows the university to recruit from geographic regions within a 2-2.5 hour radius to drive to campus for classes, while placing the students in a clinical affiliate closer to their homes. This design has been advantageous to supply qualified sonographers to a larger geographic area. According to the Bureau of Labor Statistics, the job outlook for 2016-2026, employment growth is projected to grow by 17%.

ARC and matching funds will be used to purchase two ultrasound machines for our Diagnostic Medical Sonography program.

*Period of Performance:*  October 1st, 2020-September 30th, 2021.
**Strategic Rationale**:  Supplying students with access to state-of-the-art equipment prepares them for the professional setting and correlates to quality patient care. The current lab does not provide equipment that mirrors the equipment students access in the clinical setting, creating both a disconnect and delay in effectively transitioning from the lab to patient care setting. The simulation lab currently houses seven (7) ultrasound machines used for scanning volunteers. The most current machine was

purchased in 2013, preceded by purchase of a demonstration unit in 2010. The remaining five units have ages ranging from 17 to 25 years old. Four of these units can no longer be serviced due to age which creates a deficit for students unable to learn on current ultrasound machines in preparation for the work environment.   A lab hosting advanced technology is not only essential for contemporary education but is a critical recruitment tool that aids to increase the number of applicants enrolled in the program. The design of the program is attractive to adults seeking to launch or change qualified careers and/or increase their annual income through a short-term program that can lead to a life-long career with growth opportunities.  The education provided to our graduates and the dedication to their career goal attainment requires minimal additional training once they join the workforce. US Bureau of Labor Statistics indicates that currently there are 180 DMS' employed in the NEPA region (out of a total 2,670 state-wide) This data correlates with what we have identified regarding the number of sonographers employed by our affiliates (Geisinger Health System, Commonwealth Health, Lehigh Valley Hospital). Presently, there are 14 open positions for Sonographers in the region.  Many of Misericorda's DMS graduates have been hired by Geisinger Health System. At this point, Misericordia does not have enough graduates to meet the needs of regional health systems. Routinely, health systems reach out to our DMS department indicating that they have open positions and faculty pass this information along to students.

**Collaborative Partnerships**: Misericordia University will continue to work with local health systems in the region where shortages of Diagnostic Medical Sonographers are well-documented, to place students in clinical rotations and professional careers. In addition, Misericordia will collaborate for our local Workforce Investment Board and CareerLink to ensure that students who complete the program get the assistance they need to secure employment locally.

**Project Sustainability & Capacity**: Sonography lab activities will always be an integral part of the student's education. The more current the technology, the more enhanced the learning.  The University financially supports service and repairs of all the sonography equipment until it can no longer be repaired, or the cost exceeds the actual value of the equipment. The institution will own the equipment and maintenance will be provided by the DMS department. The warranty will cover any problems that arise with the equipment during the first year. Ultrasound equipment has longevity in operation; it is the technological features that become dated and not the same as the newer equipment available in clinical affiliates in which students need to be prepared to operate.

Misericordia is committed to this program and will continue to develop a pipeline of students to meet the workforce demand and we will properly maintain the equipment. With over 56 academic programs on the graduate and undergraduate levels in full and part time formats of degree and certificate programs, numerous development programs and a strong team, we are qualified to pursue, administer and implement this grant, if awarded. We have leveraged ARC funding in the past for successful programs.

**Impact Measures**: Misericordia has made an extraordinary effort to create strong programs in its health sciences disciplines that will help to address the critical shortage of healthcare professionals and alleviate strain on a depleted workforce. It is estimated that the following impacts will be achieved within three years of the completion of the grant. All students in the DMS program will utilize this equipment. Both certificate and BS candidates take the same classes and the average class size is 15.

**Outputs:** * Two new pieces of equipment will be purchased;  *A minimum of 45 students served – 45 students will graduate from DMS programs - with 40% earning certificate and  60% earning a BS degree over the next three-years.  *150 Occupational Therapy students served*60 Physician Assistant students served*90 Middle School improved.

**Outcomes:** *40  DMS students will be improved; *150 Occupational Therapy students improved through work with DMS students in the DMS lab;*60 Physician Assistant students will work with DMS students;*90 Middle School students improved through orientation and use of sonography equipment.

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* John P. Blake, 22nd District of Pennsylvania                * John R. Gordner, 27th District of Pennsylvania
* David G. Argall, 29th District of Pennsylvania         * Mario M. Scavello, 40th District of Pennsylvania
PA State Representatives
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