Request for Information (RFI):
Applied Bachelor’s Degree Programs

Unmanned Aerial Systems (UAS)

October 31, 2017

SINCLAIR COLLEGE
Request for Information (RFI): APPLIED BACHELOR’S DEGREE PROGRAMS

Ohio Revised Code (ORC) 3333.051, enacted pursuant to Amended Substitute House Bill 49 of the 132nd General Assembly, directs the chancellor of higher education to establish a program under which community colleges, state community colleges, and technical colleges may apply to offer applied bachelor’s degrees.

Though ORC 3333.051 is not effective until September 29, 2017, ODHE requests information from Ohio’s community and technical colleges that are interested in offering applied bachelor’s degrees. The ODHE staff will review all RFI submissions for compliance with specifications identified in ORC 3333.051 and for capacity to offer the proposed program. Before approving programs through the RFI process, the chancellor will consult with the Governor’s Office of Workforce Transformation, the Inter-University Council of Ohio, the Ohio Association of Community Colleges, and the Association of Independent Colleges and Universities of Ohio.

If your institution is submitting information on more than one applied bachelor’s degree, please answer the following questions separately for each program.

Responses to this RFI are due on October 31, 2017. Please note that this RFI will not be the only opportunity for colleges to submit applications for consideration; a second RFI is planned for the first quarter of 2018. Future opportunities will be available to accommodate colleges responding to existing and emerging workforce needs.
SECTION 1: EVIDENCE OF NEED

Sinclair strives to remain at the cutting-edge of UAS training and applied research support through collaborations with leading UAS organizations in academia, government, and industry. The college is honored to be included as a partner in both the Federal Aviation Administration ASSURE UAS Center of Excellence and National Science Foundation Center for Unmanned Aircraft Systems, maintains active Educational Partnership Agreements focused on UAS with the Air Force Research Laboratory and the Air Force Institute of Technology, and is engaged in applied UAS research with NASA enabled through a Space Act Agreement. Recognizing the need for additional UAS resources for both industry and academia, Sinclair also founded and sponsors The Journal of Unmanned Aerial Systems that serves the public as an open-access resource and allows users to read, download, copy, distribute, print, search, or link to the full texts of all published material for personal, research or scholarly purposes.

1.1 Program Information

- Provide the name of the proposed program:
  - Unmanned Aerial Systems

- Provide the six-digit CIP code (format: XX.XXXX) of the proposed program, if known:
  - Unmanned Aerial Systems: 49.0102 - Airline/Commercial/Professional Pilot and Flight Crew. Due to the emerging nature of this technology, no current CIP code addresses Unmanned Aerial Systems. This CIP code most closely aligns with the program.

- Provide the names of the ATS, AAB, and/or AAS programs upon which the proposed program is intended to build.
  - Unmanned Aerial Systems: UAS.S.AAS - Unmanned Aerial Systems

1.2 Workforce Need and Other Program Availability

- Demonstrate that the proposed program meets the workforce need of regional business or industry in an in-demand field with long-term sustainability. Submit data from the Governor’s Office of Workforce Transformation as an appendix item.

The Bachelor of Applied Science (BAS) degree in Unmanned Aerial Systems is designed to fill a growing workforce need identified by employers by enhancing the technical skills of students who have an earned associate degree in Unmanned Aerial Systems (UAS). The degree builds upon students’ foundational understanding of UAS mission planning, applications, maintenance, laws and regulations, data analytics, and project management using UAS platforms. Program content, developed in collaboration with industry leaders, includes further development and refinement of
knowledge and skills involving UAS flight, history, avionics, sensors, and communications systems. Students will be able to concentrate their studies in selected paths including Data Analysis and applications such as First Responders, Geographic Information Systems, and Precision Agriculture. Students will prepare for and conduct unmanned flights similar to those commonly performed in the industry observing Federal Aviation Administrations (FAA) regulations that govern UAS operations.

The BAS degree in UAS is designed to provide a strong foundation in technical skills in the first two years, followed by specific application of those skills relative to UAS within high-demand industries in Ohio in the subsequent two years. A review of bachelor’s degrees offered within a 50 mile radius of Sinclair confirms that there does not currently exist a bachelor’s degree that extends the technical skills of graduates of a UAS program while at the same time developing a workforce qualified for higher-wage leadership and management positions with necessary content knowledge specific to Unmanned Aerial Systems. Ultimately, students who complete Sinclair’s BAS degree in UAS are well prepared to pursue a career in an emerging, high-demand, and cutting-edge field.

- **Provide a description that identifies the specific workforce need the program will address. Submit supporting data as an appendix item.**

Unmanned Aerial Systems is a rapidly-developing field that is not adequately represented by official government sources on employment data. Graduates from Sinclair’s certificate and associate degree programs are finding jobs immediately due to the scarcity of institutions offering instruction in this area and the burgeoning industry need. In addition to the associate level positions, there is great demand for higher-level technicians and managers with requisite UAS skill sets. (See Appendix A for workforce demand data).

Sinclair College also seeks workforce data from our UAS Advisory Boards (see Appendix B).

- **Describe the workforce gap that is not being met by existing bachelor’s degrees at public and private universities. (Note: If bachelor’s degrees exist that appear similar, please list them and identify how they do not meet the workforce needs).**

According to an Ohio Higher Education Information (HEI) Academic Program Query (http://qry.regents.state.oh.us/cgi-pub/acad_pgrm_query), as of 2017 no bachelor degrees were offered at any Ohio public universities in Unmanned Aerial Systems as indicated by Unmanned Aerial Systems being specifically mentioned in the program title. Sinclair is not aware of any private institutions that are offering these degrees. This lack of higher-level credentials has created a skills gap for hiring supervisors and technical leads in the UAS field, which will only grow as the industry expands (see Appendix A for expected job growth).
SECTION 2: INDUSTRY PARTNERSHIP

2.1 General Partnership Information
To be approved to offer an applied bachelor’s degree, the college must enter into an agreement with a regional business or industry to train students in an in-demand field and to employ students upon successful completion of a program.

• Provide the name of the regional business/industry partner for the proposed program:
  
  o Dixon Industries, LLC
  o Unmanned Solutions Technology, LLC

• Submit a copy of the agreement or of the expectations for the agreement as an appendix item. If an agreement will not be available until after approval by the chancellor, provide a letter from the potential partner that states key expectations to be in the agreement.

  Please see Appendix C for letters of support.

• Describe employment opportunities with this business/industry partner after the student completes the program. Include the data points that will be collected to track employment outcomes.

Both Unmanned Solutions Technology, LLC and Dixon Industries, LLC have provided a strong commitment to hire our graduates. Unmanned Solutions Technology has recently secured a large, long-term contract for UAS operators and is currently actively soliciting Sinclair’s students for employment.

The data points that will be collected include the number of graduates of the UAS program, the percentage employed in the field, and the median wage one year after graduation.

2.2 Workplace-Based Learning Experience

• Describe the workforce-based learning experience embedded in the program. Include commitments from business and industry partners as an appendix item.

Sinclair’s Unmanned Aerial Systems bachelor's degree builds off the current Unmanned Aerial Systems associate's degree (UAS.S.AAS). This program currently includes the opportunity for an internship. UAS faculty members will collaborate with the Internship Coordinator assigned to the division of Science, Mathematics & Engineering (SME) to connect interns with employers. Interns have a wide variety of local companies from which to choose when creating their internship.

• Describe the relationship of the individuals working with students in the workplace-based learning experience to those in the on-campus program (e.g., are they members of the on-campus faculty
who also participate in the off-campus experience, or are they individuals employed by the off-campus facility who agree to supervise/mentor students)?

Interns are assigned a mentor at the host company or organization. In addition, a college faculty member will also serve as a mentor. By assigning both of these mentors, the intern will have support to enable a quality, workplace-based learning experience.

- **Provide a description of the mechanisms used to measure the success of the workplace-based learning experience. Indicate how faculty members on the main campus are involved in monitoring and improving the experience.**

The success of the workplace-based learning experience will be assessed based on a combination of the following criteria customized for the individual experience:

- Assessments conducted by college faculty of student work in the internship course (to include weekly reports by the intern, papers, internship reflection form, etc.).
- Feedback submitted by the intern’s supervisor within the company or organization.
- Results of the site visit directed by college faculty in coordination with the college’s internship coordinator.
• Describe the faculty capacity for the proposed program. Include numbers for existing faculty, and faculty that will be hired.

The current faculty will provide the foundation for building an exemplary baccalaureate program in Unmanned Aerial Systems. These faculty members are highly qualified to teach at the baccalaureate level. Current faculty include:

  o Richard Ashbrook
  o Greg Gorniak
  o Dr. Steven Harbour
  o Clay Pittman
  o Benjamin Sears
  o Dr. Andrew Shepherd
  o Todd Simpson

Additional hires will be made as needed to accommodate growth in the program and the college has the resources and institutional will to ensure that this program is well equipped to be a state leader in UAS baccalaureate education.

• Describe the financial capacity for the proposed program.

Sinclair has a history of exemplary stewardship and strong financial health that is characterized by the following:

  o Achieving above average State of Ohio fiscal accountability scores (Senate Bill 6) since the inception of reporting in 1998.
  o Having no debt and minimal deferred maintenance.
  o Over many years, have maintained the lowest tuition in the State of Ohio among public institutions for Montgomery County residents.
  o Using a long-term approach to financial management which includes setting aside targeted reserves that can be used to invest in new initiatives such as baccalaureate degrees.
  o Ensuring that new initiative investments are tied to clear mission-related objectives and are supported by sustainable financial plans.

In summary, the college has sufficient resources to invest in baccalaureate degree programs with the expectation that each program will generate sufficient incremental enrollment and net income to be self-sustaining over time.
Describe the facilities and equipment capacity for the proposed program.

Sinclair College’s National UAS Training and Certification Center, located in Dayton, Ohio, represents the culmination of a focused vision dedicated to creating one of the most comprehensive and pioneering facilities for the advancement of UAS training and applied research support.

Since 2008, Sinclair College has been at the forefront of UAS innovation, creating partnerships, developing leading curriculum, and investing significantly to establish a nationally prominent program dedicated to meeting the workforce needs of the growing UAS industry. Created through total investments of more than $10 million, Sinclair’s UAS Center provides students and researchers with the ability to work with new UAS technologies in an immersive, hands-on environment.

The facility supports research, development, and training on vehicles and components through advanced unmanned (L3, Simlat, Aegis, RealFlight) and manned simulation (Elite PCATD, Redbird, GAT II), sensors, avionics, maintenance, advanced manufacturing and rapid prototyping, data analytics, and wind tunnel labs.

Additionally, indoor flight training and testing is made possible in both the UAS Indoor Flight Range and the custom built UAS Indoor Flying Pavilion. Sinclair actively operates UAS in the National Airspace System, with the most flights of any entity in Ohio since 2014, through 13 Certificates of Authorization, a Section 333 Exemption, and through operations under the Part 107 regulations.

The College has also committed the capability of its existing Network Operations Center and new task specific hardware and software to support analysis of data collected from UAS flights.

Please see Appendix D for additional facilities and equipment capacity.

In addition to allowable tuition, will additional program fees be required for students in the proposed program? If so, please describe.

The college plans to use the following tuition and fees structure:

- Coursework germane to the AAS level is envisioned to be offered at the same tuition and fee levels as currently charged to current students. Note: The current in-county tuition for Sinclair students is approximately $100 per hour; course fees vary based on specific costs unique to the course.
- Courses exclusive to the baccalaureate portion of the degree will be offered at roughly $200 per credit hour (about $6,000 per year of full-time study for the third and fourth year of the curriculum) with some courses carrying additional fees to cover specific costs unique to the course.
Please provide a budget that addresses the up-front investment required to establish the proposed program.

### Initial Investment

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<td>Software</td>
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<td><strong>Subtotal</strong></td>
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</table>

**Total**                                               **$690,000**

Please provide revenue and expense information that tracks how many years it will take for revenue derived from the program to exceed program expenses.

Sinclair evaluated the viability of the program using a ten-year framework of projected revenues and expenses. As shown in Appendix E, the program’s pro forma illustrates that Sinclair can offer a high quality educational experience in a prudent manner from a financial perspective. Specifically, the program:

1. Shows a positive margin (operating revenues exceed total operating expenses by Year 1.
2. Recovers its initial investment by Year 9.
3. Returns 132% of the required initial investment over the ten-year horizon.
APPENDICES

- List the appendix items that are included with the request, in the order of which they are in the proposal. Appendix items should be clearly labeled and submitted electronically as PDF documents or as Microsoft Office documents (e.g., Word or Excel).
  
  o Appendix A: Workforce Demand Data  
  o Appendix B: Advisory Board Members  
  o Appendix C: Letters of Support  
  o Appendix D: Facilities and Equipment Capacity  
  o Appendix E: Financial Impact of Proposed UAS Baccalaureate Degree
Appendix A: Workforce Demand Data

Unmanned Aerial Systems (UAS) is such a cutting-edge and rapidly growing field that official employment projections and occupational data are not yet available from the federal and state government sources that are typically used in forecasting employment in a field.

Workforce Supply Data from the Governor’s Office of Workforce Transformation

Workforce Supply Data from the Governor’s Office of Workforce Transformation (https://workforcesupply.chrr.ohio-state.edu/) for UAS is unavailable. Similarly, Ohio Means Jobs Data does not have a category for UAS. Therefore Sinclair referenced industry data from internationally-recognized sources regarding this emerging industry sector.

Industry Data on the UAS Market

- **$82 BILLION**: Projected economic impact between 2015-2025
- **$65 BILLION**: Estimated civil UAS production worldwide in 2016
- **100,000**: New jobs in the U.S. during the first ten years of commercial integration
- **$166 MILLION**: Venture capital funding for UAS companies between April 2014 and April 2015
- **$718.5 MILLION**: Investment in UAS since 2012 by the 25 largest UAS companies
- **10 PERCENT**: Compound annual growth rate expected for the UAS market from 2016 through 2021

References

- Teal Group, World Civil Unmanned Aerial Systems, Market Profile and Forecast, 2016
- Mordor Intelligence, Global UAVs Market – Growth, Trends and Forecast (2016-2021), 2016
According to the Teal Group, there will be a steady and substantial increase in the number of UAS units produced in the next decade, both in the U.S. and worldwide:

World Civil UAS Unit Production Forecast by Region

![Chart showing the forecasted increase in UAS units by region from 2016 to 2025. The chart indicates a steady increase with the US, Europe, and Rest of World categories showing a growing production trend over the decade.](chart-url)
Appendix B: Unmanned Aerial Systems – Advisory Board Members

Advisory group at the formation of the Sinclair UAS AAS degree:

- Brent Terwilliger PhD, Associate Professor, Embry-Riddle Aeronautical University, Orlando, Florida
- Deanne Otto PhD, Manager, Education & Training, Riverside Research, Beavercreek, Ohio
- Ronald Storm PhD, Director, The Perduco Group, Beavercreek, Ohio
- Matt Hutchinson PhD, Head Research Scientist, Woolpert, Beavercreek, Ohio
- Andrew Shepherd PhD, Director, Sinclair's National UAS Training and Certification Center

The addition of the new course options and Short-Term Technical Certificate path in Aerial Sensing Data Analytics was informed through a Designing A CUrriculum (DACUM) workshop facilitated by The Ohio State University supported by external experts including:

- Sky Andrew, Director of Pilot Operations, Acend, Maynard, Massachusetts
- Joe Cantz, Discipline Leader, Woolpert, Inc., Dayton, Ohio
- Todd Colten, Chief Aerospace Engineer, Sentera, Richfield, Minnesota
- Shane Cuddson, Imagery & Radar Science Analyst, Altamira, Dayton, Ohio
- Shahar Kosti, Technical Director, Simlat, Inc., Philadelphia, Pennsylvania
- Thomas Mackie, PS, Aviation Practice Leader, Woolpert, Inc., Dayton, Ohio
- Apostolos Mamatas, Chief Technology Officer, Altavian, Inc., Gainesville, Florida
- David Reynolds, P.E., P.S., Surveying Manager, R.B. Jergens Contractors, Vandalia, Ohio
Appendix C: Letters of Support

October 16, 2017

Steven L. Johnson, Ph.D.
President and CEO
Sinclair Community College
444 West Third Street
Dayton, Ohio 45402

Dear Dr. Johnson:

Dixon Industries (Dixon) is pleased to offer our commitment of support for Sinclair’s applied bachelor degree program in Unmanned Aerial Systems. Dixon is a woman owned small business based near Columbus, Ohio. We have built a company leveraging government, contracting, and military expertise to meet the needs of industry in the areas of government procurement, corporate strategy, curriculum development, and flight training. Through our flight training services, we are proud to provide students and recent graduates with early employment opportunities to launch their careers in aviation and Unmanned Aerial Systems (UAS).

Dixon has been a core partner of the Sinclair National UAS Training and Certification Center since 2014, providing expertise for curriculum development and a resource for UAS crewmembers in support of Sinclair’s operations. In fact, to date Dixon has hired 20 Sinclair UAS students and graduates as consultants to support the UAS flight operations of our clients.

We strongly believe in the future of the UAS industry in Ohio. Sinclair is a vital member of the UAS ecosystem in the state and nationally, advancing the applied research, applications refinement, and workforce development efforts that are required for commercial success. Dixon is honored to have been the first UAS related job for so many Sinclair students already, and we look forward to the additional and needed capabilities that applied UAS bachelor’s degree recipients will provide to the industry and our firm.

Dixon is committed to continuing to hire Sinclair students and graduates as consultants and part or fulltime employees, facilitating quality industry internships and co-op experiences, and contributing to the design and ongoing applicability of the college’s four-year UAS degree to ensure it meets employer needs. Sinclair is not only a regional and state asset, but a differentiator that attracts and retains businesses in Ohio. The addition of an applied bachelor’s program in UAS at Sinclair will enhance the college’s already significant positive impact.

Ohio needs to enable the growth of companies that require a trained technical workforce. Enabling Sinclair’s development and execution of an applied bachelor’s program in UAS is a strong signal to the UAS industry that Ohio is committed to winning and retaining them as employers. Dixon Industries remains a proud partner of Sinclair and is committed to supporting the college and its students in this important work for our communities, state, and nation.

Sincerely,

Arielle Dixon

Arielle Dixon, President
Dixon Industries, LLC
Steven L. Johnson, Ph.D.
President and CEO
Sinclair Community College
444 West Third Street
Dayton, Ohio 45402

Dear Dr. Johnson:

Unmanned Solutions Technology (UST) LLC is pleased to offer our support to the development and execution of Sinclair’s bachelor degree program in Unmanned Aerial Systems. UST is a veteran owned, small business headquartered in Beavercreek, Ohio that specializes in design and production of leading fixed-wing and vertical-takeoff-and-landing (VTOL) Unmanned Aerial Systems (UAS) and advanced ground control stations and vehicles. UST also provides professional UAS flight services supporting a variety of industry applications including a focus on infrastructure inspections and assessment.

UST has been pleased to partner with the Sinclair National UAS Training and Certification Center as an early adopter of the company’s industry leading UAS and ground control systems and has benefitted from collaborations with Sinclair faculty, staff, and students. In fact, UST has already hired two (2) Sinclair UAS students and graduates to support our manufacturing, testing, and flight operations requirements.

Seeing the potential for UAS in general, and in Ohio specifically, Sinclair and UST established a Memorandum of Understanding in 2015 to enable close collaborations to advance Sinclair’s academic programs and UST’s industry interests. The relationship with Sinclair has developed into one of our most important, both as a resource to aid in product commercialization and as a means to access high quality students and graduates to support our growing company.

UST is anticipating significant growth, with requirements for new employees with applied four-year degrees to serve as UAS crewmembers, maintainers, data analysts, manufacturing personnel, and in management roles. Therefore, due to our growing and significant workforce requirements, we are committed to supporting Sinclair’s important development and execution of an applied bachelor’s degree in UAS by providing quality internship and co-op opportunities to qualified Sinclair UAS students, preferential part and full-time employment opportunities for UAS bachelor’s degree program graduates, and collaboration with Sinclair to ensure degree learning outcomes and student experiences meet industry requirements.

As a growing Ohio based company with needs for a trained technical workforce able to obtain locally offered and quality applied bachelor’s degrees in fields including UAS, UST is pleased to not only offer our endorsement but continued partnership with Sinclair to support program success and quality student learning and employment opportunities within our firm. We are committed to the Dayton region and Ohio and applaud the efforts of Sinclair in meeting our workforce needs.

Sincerely,

Kent Tiffany, CEO
Unmanned Solutions Technology, LLC

Unmanned Solutions Technology LLC
3908 Eagle Point Drive (HQ)
Beavercreek OH 45430
Appendix D: Additional Facilities and Equipment Capacity – Unmanned Aerial Systems

1. Laboratory Facilities

Facilities and equipment are of the highest caliber. The primary objectives of the Unmanned Aerial Systems program is to provide an educational experience that develops job skills necessary to ensure employment in the technical field upon graduation or the background to proceed on to a baccalaureate degree. To succeed with this goal, the curriculum offers quality courses corroborated with state of the art laboratories.

Laboratory facilities: National UAS Training and Certification Center is located on the first floor of Building 13 and offers world class education on vehicles and components through advanced unmanned (L3, Simlat, Aegis, RealFlight) and manned simulation (Elite PCATD, Redbird, GAT II), sensors, avionics, maintenance, advanced manufacturing and rapid prototyping, data analytics, and wind tunnel labs.

2. Computing Resources

The volume of data collected through Unmanned Aerial Systems flight operations necessitates a robust storage and processing capability. To address this requirement, the college has a total of 539 servers with access to 248 terabytes of storage. There are 6,482 desktop and laptop computers connected to the campus network which are provided with 505 applications. Of these applications, only 67 must be physically installed in specific classrooms, while 438 are virtualized and available wherever the students require them. Applications are assigned to students based on the classes for which they are registered and are even available via remote access.

There are ample computer labs managed by the Information Technology Divisions, which provide:

- First-class support for Sinclair Community College students, faculty and staff in the use of Information Technology.
- State of the art computer laboratory facilities where the environment and resources facilitate student learning.
- Independent and small group workspaces designed to provide Sinclair students with convenient access to high quality facilities, technologies, resources and support services.
3. Technical Support

Initial guidance regarding the use of tools, equipment, computing resources, and laboratories is provided by department faculty using one-on-one demonstration, group demonstration, hand-outs, and other media depending on the specifics of the course.

Four full-time staff members provide technical expertise in the area of UAS enabling labs, capstones and facilitation of internship opportunities. Facility maintenance is handled by the Maintenance Department and any building maintenance issues are handled promptly upon notification of a problem.

The college’s Information Technology Department provides software support to all registered students using campus software applications. Required software applications can be accessed on or off campus. Any software issues are reported to the IT department for prompt resolution.

4. Maintenance and Upgrading of Facilities

Annually a capital plan is prepared to capture the programmatic and reserve for replacement (R&R) needs of the college. In preparing this plan, the Capital Plan Committee collects and evaluates requests for projects. All requests come through the President’s Cabinet with input from faculty and staff. Review meetings are held with division level submitters, the Office of Budget and Analysis and Facilities Planning and Construction. Requests are evaluated and prioritized against criteria such as need for lifecycle replacement, revenue increase or cost savings (i.e., ROI), improved student success or services, increased capacity, safety and energy conservation.

The Capital Plan has five parts:

1. Equipment
2. Projects over $100,000
3. Projects under $100,000
4. Professional services related to capital projects
5. Contingency

The sources of funding for the capital budget are:

- College Allocated (reserve) Funds: funds previously set aside plus annual funding additions provided from operating and auxiliary budget net revenues and from investment income.
- State Capital Appropriations: (a) specific allocation of basic renovation funds for facility renewal and replacement lifecycle and major projects, (b) instructional equipment, and (c) annual capital component formula allocations (money from prior state capital bills that is being received over time instead of as a one-time lump sum). The State of Ohio enacts a capital budget every two years.
The majority of FY 2016 projects and equipment are items necessary for lifecycle replacements (i.e., to avoid accumulating deferred maintenance and to maintain currency of academic programs). A reasonable stewardship level for future annual funding of the college’s $550 million asset value is estimated to be in the $15+ million range.

The regional Sinclair locations fall under this same process for funding their needs for capital improvements or furniture and equipment.

5. Library Services

The Library’s Technical Collections:

Sinclair students and faculty have access to more content from top publishers than is available at the average Ivy League institution. The library maintains local licenses and partners with OhioLINK to provide thousands of eBooks, scholarly eJournals, and digital media. This includes journal content from Springer, Elsevier, and Wiley and eBooks from Springer and Safari. These resources are available 24x7, on campus or from home, to anyone with an active Sinclair ID.

Sinclair maintains a local library collection of 85,000 print books and 300 subscriptions that support the curriculum. Students and faculty also have access to the OhioLINK library collections of nearly 50 million items from over 120 college and university libraries. Using their Sinclair ID, students and faculty can request directly, at no cost, any circulating item from any academic library in Ohio. Students and faculty can also visit other OhioLINK libraries in person and use their Sinclair ID card to borrow materials without delay.

Key repositories and databases include:

- OhioLINK Electronic Journal Center - Almost 10,000 research journals with 45+ million articles. Top publishers include Elsevier, Springer, and Wiley. Includes journals categorized by subject areas.
- OhioLINK Electronic Book Center - 81,000 eBooks
- OhioLINK Electronic Thesis and Dissertation Center - 55,000 full-text dissertations
- OhioLINK Digital Media Center - Over 3,000 digital videos and 100,000 image files
- Films on Demand - Over 17,000 streaming videos

Faculty Requests

Faculty can request that the library acquire print or online books, journals, or other media directly through their assigned library liaison. Faculty can make requests in any way that is convenient to them: phone calls, emails, and notices from publishers’ announcements are common means of making requests. The librarian will work with the faculty member to determine if the request should be purchased, licensed, or borrowed. Typically, any book requested is purchased. For digital items, the librarian will work with IT to ensure that material will work on the college network and within the course management system.
Locating and Obtaining Electronic Information

The Sinclair library catalog includes searchable records for 250,000 eBooks, 41,000 online periodicals, and 17,500 streaming videos. Through local subscriptions and OhioLINK, the library offers 150 research databases, most with some full text. The library’s link resolver expands access, by seamlessly connecting researchers from an index citation to the full-text item, no matter where the item resides electronically. The library’s discovery layer, LibSearch, searches the databases and the library catalog at one time in a Google-like manner. This helps students unfamiliar with the databases of a discipline succeed in finding information. In addition, the librarians create research guides (LibGuides) to direct students to the databases most useful for particular courses or subject areas.

Other Services

The library is open six days a week with IT, tutoring, and library staff available to assist students. An online chat service is available and a searchable database of Frequently Asked Questions is maintained by librarians. Faculty can request general library instruction or instruction tailored to a specific assignment. Faculty can also request an embedded librarian to be integrated into their course shell to answer student questions, guide students to resources, and provide research tips.
## Appendix E: Financial Impact of Proposed UAS Baccalaureate Degree

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<td>416,304</td>
<td>425,903</td>
<td>440,987</td>
<td>451,808</td>
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<td>Net</td>
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<td>12,586</td>
<td>87,822</td>
<td>47,550</td>
<td>77,819</td>
<td>91,387</td>
<td>109,523</td>
<td>114,239</td>
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<td>Cumulative Net</td>
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<td>$12,586</td>
<td>$100,408</td>
<td>$147,958</td>
<td>$225,777</td>
<td>$317,164</td>
<td>$426,687</td>
<td>$540,926</td>
<td>$664,440</td>
<td>$787,954</td>
<td>$911,468</td>
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### Initial Investment

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<tr>
<td>Non-Capital</td>
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<td>Total</td>
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<td>% Recouped from</td>
<td>132%</td>
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<td>Operations through</td>
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<td>Year 10</td>
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