**I. Title Page**

**Colleges/Units Participating in the Activities**:

**Lead**: College of Agriculture

**Co-Lead 1**: College of Engineering

**Co-Lead 2**: Academic Insights

**Co-Lead 3**: College of Liberal Arts

**Co-Lead 4**: Biggio Center

**Executive Sponsor**: Dr. Paul Patterson (Dean, College of Agriculture), Dr. Mario Eden (Dean, College of Engineering), Dr. Katie Boyd (Director, Academic Insights), Dr. Jason Hicks (Dean, College of Liberal Arts) and Dr. Asim Ali (Executive Director, Biggio Center for the Enhancement of Teaching and Learning).

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II. **Executive Summary**

**Project Title**: Development of Auburn Educational Data Intelligence System (AEDIS)

The project aligns with the following goal of the Auburn University’s Strategic Plan 2019-2024:

*“Goal 6: Operational Excellence. Technology Application. Technology is often a key driver of operational excellence. Every opportunity will be taken to apply technology in a smart and cost-justified manner to better support core research and operational functions.”* Source: 2019-2024 Strategic Plan. <https://ocm.auburn.edu/strategic_plan/goals/excellence.php> (Visited: 08/12/2024).

Teaching assessments are key to demonstrating the effectiveness of Auburn University’s instructional program. Typically, each department across AU campus develops their assessment reports using the data submitted by individual faculty members. Generally, the data is collected through pre- and post-tests at the beginning and end of the semester, respectively. The data gets tabulated by each faculty and sent to the assessment coordinator at the end of each semester or in some cases at the end of academic year. Timely data collection and analysis can be cumbersome and reduce the impact of collected insights. Data is often lost, and instructors may not provide data due to multiple reasons leading to a weaker assessment report for the unit. The assessment reports are quite simple and do not use analytical methods to connect the data and to explore hidden data correlations to improve student performance. There is a need to facilitate data collection across AU campus and develop technology to analyze data to gain near real-time information for the teachers.

We propose to develop Auburn Educational Data Intelligence System (AEDIS), a digital infrastructure which can (1) enable course teachers to collect data online combined with near real-time analytics displayed on a webpage, (2) track progress of individual AU students from the time they enter the system, (3) facilitate the program assessment administrated by the Office of Academic Insight. Our team will develop an Advisory Board comprising of Assessment Coordinators across campus, OIT and teachers who will help our team to ensure we are considering all the aspects of developing the infrastructure. We will collect and use machine learning approaches to classify pre- and post-test or other data collection instruments employed by course teachers in the College of Agriculture, Engineering, and Liberal Arts. Dr. John Schmidt will focus on online MS in I/O PSYC program that he manages and the graduate courses that are delivered asynchronously in Canvas. Online forms will be developed for each of these instruments and a specific QR code will be assigned for the instrument. Multivariate data will be collected on each student e.g. Freshmen-Senior; Transfer/direct admit; GPA etc. Collected data will be analyzed using machine learning algorithms and reports will be generated using generative AI. Data layers – managing the assessment data – will furnish the development of a web-dashboard displaying the metrics as easy-to-use figures for data-driven decisions. Ultimately, we will hand-over the infrastructure to AU OIT and Academic Insights for further assimilation into operational practices.

Our approach aligns with Auburn University’s Goal 6 (stated above) through the development of technology for operational excellence. The technological infrastructure we aim to develop will help all units across campus involved in teaching and instruction. The online data collection system will ensure rapid and seamless data collection and analytics will reduce the burden of collecting data while ensuring data is not lost. Digitization will allow teachers to visualize data on each student and track individual student’s previous performance and predict future performance in their course dictating the efforts required to improve the learning experience for each student. Reports generated using Generative AI can provide faster, near real-time, and comprehensive reflection of the academic program performance of each department.

III. **Detailed Timeline, Activities, and Budget for Year 1**, including a. Year 1 dates (anticipated)

a. Detailed Description of Year 1 activities

1. Recruit student workers: We will recruit Graduate and Undergraduate students to successfully complete the project.

2. Conduct meetings: The Advisory Board members will meet with the project team and we will inform them about the planned activities to seek feedback.

3. Collect data collection instruments from various channels – including Canvas, Google Forms, and Qualtrics surveys -- across the campus, discuss these instruments and categorize them.

4. Develop and discuss data collection, workflow and display infrastructure. The Advisory board will be informed of these developments and feedback will be sought.

5. A few instruments, such as AI-enabled automated report generator, will be digitized and tested using mock data.

6. Digitized data collection system will be launched for a few courses and one academic program.

b. Itemized budget for Year 1 activities including any matching funds from the college/unit

|  |  |
| --- | --- |
| Budget Year 1 | |
| Item | Cost |
| Salary + Fringe |  |
| Dr. Amit Morey (1 Month) ($10,717.78+$3,311.794) | $0.00 |
| ONE Analyst ($60,000+$18,540) | $0 |
| ONE Graduate Research Assistants (Computer Sci.) (1 Year) ($25,000+$950) | $25,950 |
| ONE GRA (Poultry Sci.) (1 year) ($21,000+$798) | $21,798 |
| FOUR Undergraduate Research Assistants (Poultry Science and Computer Sci.) $600 per month x 3 x 12 months | $21,600 |
| GRA Tuition (40% of annual salary) | $18,400 |
| Software Procurement | $7,000 |
| Workshop and presentations | $5,000 |
| **TOTAL** | $99,748.00 |

c. Software Tools and Platforms for the Project Implementation

Our team will make use of tools and platforms offered by Microsoft, Smartsheet, and Salesforce to facilitate the development of the Auburn Educational Data Intelligence System (AEDIS). In what follows, we briefly elaborate on the candidate toolkits.

* *Microsoft’s Suite of Software Solutions* will be leveraged to implement the AEDIS prototype.
  + Microsoft Power Automate: Automates program assessment workflows, collects data from MS Forms, and updates records in a real-time manner.
  + Microsoft Forms: Collects assessment data through surveys, quizzes, and forms, which can be integrated with Power Automate for seamless data handling.
  + Microsoft Power BI: Creates interactive and real-time dashboards and assessment reports, visualizing data collected through MS Forms and automated workflows.
  + Microsoft Teams: Facilitates collaboration among teachers, students, and administrators, integrating well with other Microsoft tools for data sharing and communication.
* *Smartsheet* offers an array of features to enhance the AEDIS implement. 
  + Data Collection and Management: Smartsheet allows our development team to create forms for data collection, which can be used by course instructors to gather information from students. The data collected can be organized and managed within Smartsheet, providing a centralized location for all assessment data.
  + Real-Time Analytics and Dashboards: Smartsheet provides real-time analytics and customizable dashboards, enabling us to visualize data and track student progress. This can be particularly useful for monitoring individual course performance and overall program effectiveness.
  + Collaboration and Project Management: Smartsheet facilitates collaboration among instructors, students, and program evaluators. It allows for project tracking, assessment task assignments, and status updates, ensuring that everyone involved in the assessment process is on the same page.
  + Integration with Other Tools: Smartsheet integrates well with other platforms, including Microsoft tools like Power Automate and Power BI – our team can use Smartsheet in conjunction with Microsoft tools to enhance data visualization.
  + Automation and Workflow Management: Smartsheet’s automation capabilities can help streamline repetitive program assessment tasks and ensure that data are consistently updated and accurate, which will be particularly beneficial for program assessment.
* *Salesforce* is a comprehensive Customer Relationship Management (CRM) solution designed specifically for educational institutions.
  + Dynamic Assessments: Salesforce allows us to create dynamic assessments using guided workflows, which can include detailed questions with conditional logic and dependencies, making it easier to gather comprehensive data on program assessment.
  + Tracking Progress: Our will can use assessment scores and charts within Salesforce to track the progress of program evaluations over time. This feature will help in monitoring outcomes and making data-driven decisions.
  + Action Plans: We plan to utilize Salesforce to create action plans based on assessment results. These plans can be associated with specific records, such as course profiles, to ensure that appropriate support and interventions will be offered for improvement.
  + Einstein AI: Integrated within Salesforce, Einstein AI can provide predictive analytics and intelligent automation, helping to improve program engagement and outcomes.
  + Tableau: This powerful data visualization tool can be used to create interactive dashboards and assessment reports, similar to Power BI.
  + MuleSoft: This platform will allow our system to integrate various data sources, ensuring that all our assessment datasets are connected and accessible.
  + Marketing Cloud: This tool can help manage communications and engagement campaigns throughout the program assessment, enhancing the student retention efforts.
* Other Tools to be Piloted in this project include the following.
  + Azure Synapse Analytics: Handles large datasets and performs complex queries, integrating with Power BI for comprehensive data analysis.
  + Microsoft 365 Copilot: AI-powered assistant that automates and streamlines various administrative tasks, such as drafting reports and summarizing data.
  + Microsoft Education Insights: Provides real-time analytics on student engagement and progress, helping educators tailor their teaching strategies to meet individual student needs.

d. Benchmarks, Milestones, and Key Performance Indicators of Year 1 activities

Benchmark for Year 1:

Successful development and initial deployment of AEDIS for data collection, real-time analytics, and student performance tracking at Auburn University. We will recruit the analyst, GRA and UG students to conduct the project.

Milestones for Year 1:

January – March 2025:

1. Recruitment of UG, GRAs, Analyst. Recruitment of Project Team
2. Formation of the Advisory Board
3. Conduct first Advisory Board meeting.

March 2025: Formation and first meeting of the Advisory Board to explain the objectives, goals and seek inputs.

April – June 2025: Collection and Categorization of Assessment Instruments. Data collection architecture and dashboard for data visualization.

July-August 2025: Initial development of the online data collection system, creation of QR code-linked online forms for categorized instruments.

August 2025: Testing and Mock Data Implementation for functionality and accuracy.

September – November 2025: Feedback on the system developed, troubleshooting, further development based on feedback.

October 2025: Second Advisory Board Meeting to inform about the progress and seek feedback.

December 2025: Soft launch of the digitized data collection system for selected courses. Final Report and Feedback Integration.

December 2025: Update Advisory Board of the Planning for Year 2. Workshop for existing and new stakeholders across the campus.

Key Performance Indices (KPIs) for Year 1:

Team Recruitment Efficiency: Team recruitment should be completed.

Advisory Board Formation and Active Engagement. Conduct three meetings with the Board and % inclusion of their feedback.

Data Collection and Categorization: Number of data collection instruments successfully collected and categorized. Number of faculty covered.

Infrastructure Development Progress: % completion of the online data collection system, Number of online forms developed and QR codes assigned. System Testing and Feedback

Number of digitized instruments tested with mock data: % of identified issues resolved before the system's soft launch.

Initial System Deployment Success: Number of courses using the digitized data collection system by the end of Year 1. User satisfaction ratings for the initial deployment. Average time reduction in data collection and report generation. Stakeholder Feedback and Iteration, % of feedback from initial users and the Advisory Board integrated into the system. Quality and completeness of the Year 1 progress report.

Conduct a workshop with at least 30 participants across the University.

IV. (If necessary) **Detailed Timeline, Activities, and Budget for Year 2**, including a. Year 2 dates (anticipated)

a. Detailed Description of Year 2 activities

1. Conduct presentations in different Departments and Colleges to inform the stakeholders of our initiatives. Encourage more teachers to participate in the program.
2. Scale up the addition of courses to the online forms and ensure seamless data integration pipeline.
3. Develop and reconfigure AI models for data analysis.
4. Develop the data dashboard for multiple users to visualize data at micro and macro scale i.e. individual student level🡪course level 🡪 department level🡪college level.
5. Conduct meetings with the Advisory Board.

b. Itemized budget for Year 2 activities including any matching funds from the college/unit

|  |  |
| --- | --- |
| Budget Year 2 | |
| Item | Cost |
| Salary + Fringe |  |
| Dr. Amit Morey (1 Month) ($10,717.78+$3,311.794) | $0.00 |
| ONE Analyst ($60,000+$18,540) | $0 |
| ONE Graduate Research Assistants (Computer Sci.) (1 Year) ($25,000+$950) | $25,950 |
| ONE GRA (Poultry Sci.) (1 year) ($21,000+$798) | $21,798 |
| FOUR Undergraduate Research Assistants (Poultry Science and Computer Sci.) $600 per month x 3 x 12 months | $21,600 |
| GRA Tuition (40% of annual salary) | $18,400 |
| Software Procurement | $7,000 |
| Workshop and presentations | $5,000 |
| **TOTAL** | $99,748.00 |

c. Benchmarks, Milestones, and Key Performance Indicators of Year 2 activities

Benchmarks for Year 2:

Establishing and scaling-up AEDIS through increased engagement with the stakeholders across campus. Increasing awareness, participation, and the technical capabilities of the system for data collection, analysis and visualization.

Milestones for Year 2:

January – March 2026: Conduct presentations regarding the project to three departments to inform the stakeholders regarding the initiative. We aim to onboard a minimum of ten new courses to the program through these presentations. Conduct 1st meeting with the Office of Information Technology, Biggio Center and Academic insights on preparing for a handover of AEDIS ~~in Year 3~~. Initiate discussion on the inclusion of private equity partners for sustainability and commercialization of the technology developed.

January-June 2026: Scaling up course integrations and ensuring that ~~at least 30 courses are~~ upto 15 courses are integrated by mid-year. Establishing a seamless data integration pipeline for these courses, minimizing data transfer errors and delays.

March-August 2026: Development and reconfiguration of AI models. Implement AI-driven models to process and generate insights from the collected data using Large Language Models.

April-May 2026: Advisory Board Meeting and ~~presentations to two departments across the campus to~~ potentially gain 5~~-10~~ courses for inclusion in the project. Conduct 2nd meeting with the OIT, Biggio Center and Academic Insights to provide status updates and receive updates on technology hand-over.

August-December 2026: Development of multi-level data dashboard for data visualization for multiple users simultaneously without performance degradation.

November-December 2026: Advisory Board Meeting and presentations to existing stakeholders. Workshop for existing and new stakeholders.

Key Performance Indices (KPIs) for Year 2:

Stakeholder engagement: Number of presentations conducted, total number of participants, increase in the project participation after the presentations. Feedback from the stakeholders regarding presentations to improve future presentations.

Course integration and data pipeline efficiency: Number of courses successfully integrated into the online forms, average time taken to integrate new courses into the system, % reduction in data transfer errors withing the integration pipeline.

AI Model Development and Reconfiguration: Accuracy and reliability to analyze data. Time taken for AI models to process data and generate reports.

Data dashboard development: Completion of multi-level data dashboard. User satisfaction survey and ratings for useability and performance. Number of active users.

Advisory board feedback and implementation: Number of meetings, effectiveness of meetings to improve the systems developed.

The OIT, Biggio Center and Academic Insights are aware of AEDIS hand-over and the team to learn technology hand over process.

VI. **Long-Term Funding Plan:** If the proposed activities are intended to be continuing, a detailed plan for the how the unit’s budget will be reallocated to cover these expenses in the long-term.

The team will develop AEDIS and hand over to the concerned office, either Academic Insights, OIT or Biggio Center and that particular office will continue to offer the services to the stakeholders across the campus. Another route explored is to invite private equity partners to further develop AEDISand commercialize it. The later route will provide continued income for Auburn University through licensing of AEDIS. Importantly, our team will seek extramural funding opportunities – in addition to a revenue-generating model -- to cover the long-term expenses of this initiative.