THE UNIVERSITY OF ARIZONA®

New Academic Program Workflow Form

General

Proposed Name: Information Management

Transaction Nbr: 00000000000134

Plan Type: Specialization

Academic Career: Undergraduate

Degree Offered: Undergraduate Certificate

Do you want to offer a minor? N

Anticipated 1st Admission Term: Fall 2023

Details

Department(s):

UAZS

DEPTMNT ID	DEPARTMENT NAME	HOST
2910	College of Applied Science and Technology	Y

Campus(es):

ONLN

LOCATION	DESCRIPTION
ONLN	Online

Admission application terms for this plan: Spring: Y Summer: N Fall: Y

Plan admission types:

Freshman: N   Transfer: N Readmit: N   Graduate: Y

Non Degree Certificate (UCRT only): N

Other (For Community Campus specifics): N

Plan Taxonomy: 11.1099, Computer/Information Technology Services Administration and Management, Other.

Program Length Type: Program Length Value: 0.00

Report as NSC Program:

SULA Special Program:

Print Option:

Diploma: Y   Information Management Certificate

Transcript: Y   Information Management Certificate

Conditions for Admission/Declaration for this Major:

No requirements.

Requirements for Accreditation:

N/A

Program Comparisons

University Appropriateness

The proposed program is consistent with the following CAST strategic plan:
Objective: Build world class infrastructure and effective organizational structure
Objective: Mentor, retain, and motivate faculty who deliver world class, 4th IR education and undergraduate research
Objective: Recruit, advise, and inspire diverse, post-traditional, transfer students to impact our region and the world
Objective: Develop & deliver rigorous & relevant applied education and research

Arizona University System

NBR	PROGRAM	DEGREE	#STDNTS	LOCATION	ACCRDT
1	Appl Computing emph Info Mgmt	BAPS	38	UArizona, Southern AZ & ONLN	Y

Peer Comparison

see attached

Faculty & Resources

Faculty

Current Faculty:

INSTR ID	NAME	DEPT	RANK	DEGREE	FCLTY/%
00634016	Henry Werchan	2910	Assit. Prof. Pract.	Master of Science	.10
01372460	Michael Milazzo	2910	Assit. Prof. Pract.	Master of Science	.25

INSTR ID	NAME	DEPT	RANK	DEGREE	FCLTY/%
12006285	Michael Griffith	2910	Assit. Prof. Pract.	Master of Science	.25
14206933	Li Xu	2910	Professor	Doctor of Philosophy	.25
22082752	Gurmindersingh Khalsa	2910	Adj. Assit. Prof	Master of Science	.25
22083818	Diana Saldana Jimenez	2910	Assit. Prof. Pract.	Doctor of Philosophy	.25
22089587	Robert Kumar	2910	Assit. Prof. Pract.	Master of Science	.25

Additional Faculty:

One additional FTE required starting in year 2 consistent with the program growth.

Current Student & Faculty FTE

DEPARTMENT	UGRD HEAD COUNT	GRAD HEAD COUNT	FACULTY FTE
2910	1060	0	5.00

Projected Student & Faculty FTE

	UGRD HEAD COUNT			GRAD HEAD COUNT			FACULTY FTE		
DEPT	YR 1	YR 2	YR 3	YR 1	YR 2	YR 3	YR 1	YR 2	YR 3
2910	15	30	50	0	0	0	5.00	6.00	6.00

Library

Acquisitions Needed:

None

Physical Facilities & Equipment

Existing Physical Facilities:

Online classes currently offered.

Additional Facilities Required & Anticipated:

None required.

Other Support

Other Support Currently Available:

Existing support staff will support program.

Other Support Needed over the Next Three Years:

No additional support staff required.

Comments During Approval Process

3/25/2022 8:52 AM
PAULEWAGNER

Comments
Approved.

8/11/2022 4:20 PM
ESANDMAR

Comments
Updated budget form w/ AIB numbers, removed South campus (college has indicated all their programs will be ONLN only), and updated Name to remove "Cert"

Note: New programs requiring a program fee must have the fee approved prior to implementation.

I. **CERTIFICATE DESCRIPTION**–provide a marketing description for the proposed certificate. Include the purpose (preparation for professional certification exams, degree program recruitment, or employability enhancement), nature, and program highlights. The description must match departmental and college websites, Degree Search & Academic Advisement Reports / Graduate Catalog and Program Descriptions page, handouts, promotional materials, etc.

The 18-credit hour certificate in Information Management provides students with experience and training in information management and prepares them for careers in database administration, data analysis and engineering, web development and information architecture. Students learn the foundations of database systems, web design and programming, data visualization and analysis, as well as methods for visualizing, managing, and analyzing information. These skills are critical as organizations become more reliant on data driven decision making.

II. **NEED FOR THE CERTIFICATE/JUSTIFICATION** - describe how the certificate fulfills the needs of the city, state, region, and nation. Provide market analysis data or other tangible evidence of the need for and interest in the proposed certificate. This might include results from surveys of current students, alumni, and/or employers or reference to student enrollments in similar programs in the state or region. Include an assessment of the employment opportunities for graduates of the program during the next three years. Curricular Affairs can provide a job posting/demand report by skills obtained/outcomes/CIP code of the proposed certificate. Please contact the Office of Curricular Affairs to request the report for your proposal.

Initially, we will target students in our own programs (e.g. BAS in Applied Computing, BAS in Cyber Operations, BAS in Organizational Leadership, and BAS in Regional Commerce). Students currently enrolled in the BAS in Applied Computing with an emphasis in Information Management cannot pursue this certificate.

a. Anticipated Enrollment and General Demand:
According to the U.S. Bureau of Labor Statistics, jobs within Computer and Information Technology occupations are expected to grow by 13% from 2020 to 2030. Over 650,000 new jobs are expected to be added to the market. Furthermore, the median annual wage is estimated to exceed $90,000.

This certificate program will target:
- corporate partners that have established agreements for the BAS in Applied Computing as an alternative option for those organizations
- industry professionals seeking to improve their skills and/or increase their eligibility for promotion
- students interested in augmenting their current degree program with skills such as information management, data visualization, and data analysis
- Source: https://www.bls.gov/ooh/computer-and-information-technology/home.htm

Year Projected Annual Enrollment:
- 1st Year, 15 students enrolled
- 2nd Year, 30 students enrolled
- 3rd Year, 50 students enrolled

Expected enrollment in these certificates is based on an analysis of comparable certificates at peer institutions, existing CAST certificates, and enrollment in related emphasis areas.

    b.   Needs Served by the Certificate

The demand for these workers is anticipated to stem from greater emphasis on cloud computing, big data storage, and information security.

According to the University of Arizona Eller College of Management, the demand for jobs in Arizona is expected to follow national trends, with expected job growth rates of 3.7% in 2021 and 4.3% in 2022.
Sources: https://eller.arizona.edu/departments-research/centers-labs/economic-business-research/arizona-economic-outlook

Related Positions:
- Database administrator
- Data analyst
- Data engineer
- Web developer
- Information architect

Local worksites for computing students in the area of information management transcends all industries and fields, including:
- Boeing
- Amazon
- Banner Health
- Oracle

Similar programs:
- University of Nevada, Las Vegas; Graduate Certificate in Management Information Systems
- Virginia Commonwealth University, Certificate in Information Systems

III. **PROGRAM AFFILIATION**- specify whether the UA offers an affiliated program at the undergraduate or graduate level. The affiliated program may or may not have the same name as the proposed certificate. Will there be any collaboration with other departments or universities to maximize resources? If there is collaboration, please include a memo (email is acceptable) of support from the applicable parties.

This certificate is affiliated with the BAS in Applied Computing program; specifically, the emphasis in Information Management.

IV. **CERTIFICATE REQUIREMENTS**– complete the table below to list the certificate requirements, including minimum number of credit hours, required core, electives, and any special requirements. Information in this section must be consistent throughout the proposal documents (comparison chart, department checklists, curricular/assessment map, etc.).

UNDERGRADUATE CERTIFICATE
Requirements should include sufficient units to provide a substantive program and an appropriate level of academic rigor and in no case be less than 12 units of credit.

Minimum total units required	18
Minimum upper division units	18
Total transfer units that may apply to the certificate. *Note: A minimum of six*	6

(6) units used to complete the certificate must be University credit.	
Pre-admissions expectations (i.e., academic training to be completed prior to admission)	None
Certificate requirements. List all certificate requirements including core and electives. Courses listed must include **course prefix, number, units, and title. Mark new coursework (New)**. Include any limits/restrictions needed. Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	CORE COURSES APCV 302 (3) Statistics in the Information Age - This course provides an introduction to descriptive and inferential statistics. It also presents an introduction to data complexity, uncertainty and variation in information age and discusses techniques for interpreting the data. APCV 320 (3) Computational Thinking and Doing - This course provides an overview of the basics of programming and techniques used by computing professionals in a variety of application areas. Topics include computation, programs, algorithms, programming languages, and complexity, as well as how these concepts and techniques are used to solve problems. EMPHASIS APCV 360 (3) Database Management Fundamentals introduces database management concepts including definitions of data elements, basic data structures, data modeling, and systems architectures. Topics also cover some of the leading database management products and design tools currently in use. APCV 361 (3) Data Analysis and Visualization lays a foundation for students to understand how to process, analyze, and visualize data. Topics include data collection and integration, exploratory data analysis, statistical inference and modeling, machine learning, and data visualization. The emphasis of the course topics will be placed on integration and synthesis of concepts and their application to solving problems. Students will explore these topics using software tools. CSCV 460 (3) Functions of a database system. Data modeling and logical database design. Query languages and query optimization. Efficient data storage and access. Concurrency control and recovery. ELECTIVES (CHOOSE 1) APCV 403 (3) Principles of Web Design addresses concepts of web design using multimedia, visual, communication and interaction principles. Students will also be introduced to web authoring, design solutions and emerging technologies. APCV 496 (3) Special Topics in Applied Computing. The fields of informatics, design, data visualization, and technoscience move at an incredibly fast pace. This course looks at timely, relevant topics that impact tomorrow's scholars, creatives, and designers.

	CSCV 337 (3) Web Programming provides an introduction to the techniques and technologies for developing dynamic web sites. Topics include web servers, PHP and JavaScript as server-side programming languages, the MySQL database, JavaScript and AJAX for enriching web services, and page layout with HTML and CSS. Security concerns will be considered with details for prevention of such vulnerabilities in web applications. NETV 378 (3) System Administration covers the theory and application of system administration from a UNIX and Windows perspective, including installation, management, optimization, and security. Case studies of industry examples are used as applications to reinforce the discussed theories NETV 379 (3) Course covers the theory and application of cloud computing, including Cloud Computing network design and connectivity, server management, best-practices, security, and provider service level agreements. Case studies of industry examples are used as applications to reinforce the discussed theories.
Internship, practicum, applied course requirements (Yes/No). If yes, provide description.	No
Any double-dipping restrictions (Yes/No)? If yes, provide description. *A maximum of 6 units may double-dip with a degree requirement (major, minor, General Education) or second certificate.	Yes, 9 units maximum.
Additional requirements (provide description)	

V. **CURRENT COURSES**–using the table below, list all existing courses included in the proposed certificate. You can find information to complete the table using the UA course catalog or UAnalytics (Catalog and Schedule Dashboard> "Printable Course Descriptions by Department" On Demand Report; right side of screen). If the courses listed belong to a department that is not a signed party to this implementation request, upload the department head's permission to include the courses in the proposed certificate and information regarding accessibility to and frequency of offerings for the course(s). Upload letters of support/emails from department heads to the "Letter(s) of Support" field on the UAccess workflow form. Add rows to the table, as needed. **New course proposals must be submitted via UAccess Course Add forms following the procedures and deadlines detailed here.**

Course prefix and number (include cross-listings)	Units	Title	Pre-requisites	Modes of Delivery (online, in-person, hybrid)	Campus and Location Offered	Dept signed party to proposal? (Yes/No)
Core				Online		Yes
APCV 302	3	Statistics in the Information Age		Online		Yes
APCV 320	3	Computational Thinking and Doing		Online		Yes
Emphasis				Online		Yes
APCV 360	3	Database Management Fundamentals		Online		Yes
APCV 361	3	Data Analysis and Visualization	APCV 302 APCV 320	Online		Yes
CSCV 460	3	Database Design	Students should complete the core courses of APCV 302 and APCV 320, or consent of the instructor	Online		Yes
Electives (Choose 1)						
APCV 403	3	Principles of Web Design		Online		Yes
APCV 496	3	Special Topics in Applied Computing		Online		Yes
CSCV 337	3	Web Programming	CSC 127A, ISTA 130, ECE 175, equivalent experience, or consent of the instructor	Online		Yes
NETV 378	3	System Administration		Online		Yes
NETV 379	3	Cloud Computing		Online		Yes

VI.   **Learning Outcomes** - Complete this table as a summary of the learning outcomes from your assessment plan, using these examples as a model. If you need assistance completing this table and/or the Curriculum Map, please see the resources at the Office of Instruction and Assessment or contact them here.

Learning Outcome #1: Students will be able to critically analyze information management concepts and assess their applicability to real world scenarios.
Concepts: Students will apply information management concepts learned in core courses.
Competencies: Students will demonstrate critical analysis skills.
Learning Outcome #2: Students will be able to communicate effectively orally and in writing.
Concepts: Students will effectively communicate information management concepts learned in core courses.
Competencies: Students will demonstrate effective written and oral communication skills.

Learning Outcome #3: Students will develop the engineering and operational skills required to create, operate and defend information management networks.
Concepts: Students will design and engineer information management architectures to meet operational business requirements.
Competencies: Students will demonstrate complex network architectures in a simulation environment.

VII.   CONTACTS AND ADMINISTRATION

UNDERGRADUATE (delete if n/a)

a.   List the name and contact information for the primary point of contact for the certificate:

Henry Werchan, Program Director, Applied Computing, werchanh@arizona.edu

b.   List the name and contact information for the person or persons who will serve in the role of Director of Undergraduate Studies (DUS) for the certificate (this is not always the same as the DUS for affiliated programs or head of the managing academic unit.):

 Linda Denno, Dean of Faculty and Academic Affairs, ldenno@arizona.edu

c.   If known, list the members of the certificate oversight committee for this certificate. Note: undergraduate certificate oversight committees shall consist of a minimum of 3 members, 2 of which are faculty and at least one of the 2 is participating faculty in the certificate program. The oversight committee is responsible for 1) qualifications of participating faculty, 2) coordination of admissions recommendations with the Office of Admissions, and 3) curricular changes:

Paul Wagner, Department Head, Department of Applied Technology, paulwagner@arizona.edu
Henry Werchan, Program Director, Applied Computing, werchanh@arizona.edu
Li Xu, Professor, College of Applied Science and Technology, lxu@arizona.edu

VIII.   REQUIRED SIGNATURES

Program Director/Main Proposer (print name and title):
Henry Werchan, Program Director, Applied Computing
Program Director/Main Proposer signature:
Date:

Henry Werchan
                       Mar 21, 2022

Department Head (print name and title):
Paul Wagner, Department Head, Department of Applied Technology
Department Head's signature:
Date:

                       Mar 21, 2022

Associate/Assistant Dean (print name):

 Linda L Denno

Associate/Assistant Dean's signature:

Date:

Linda L Denno   Mar 21, 2022

Dean (print name):

Gary A Packard Jr

Date:

Gary A Packard Jr   Mar 23, 2022

For use by Curricular Affairs (Undergraduate):

Committee	Approval date
APS	
Undergraduate Council	
Undergraduate College Academic Administrators Council	

Information Management Prgm_ UCERT CERTG_2022_FINAL

Final Audit Report   2022-03-23

Created:	2022-03-22
By:	Esther Henley (ehenley@email.arizona.edu)
Status:	Signed
Transaction ID:	CBJCHBCAABAAqF9GiTXkvt8cXfKnpPDewz2Pmn81PQB-

"Information Management Prgm_ UCERT CERTG_2022_FINAL" History

📄 Document created by Esther Henley (ehenley@email.arizona.edu)
2022-03-22 - 0:18:26 AM GMT

✉ Document emailed to Henry Werchan (werchanh@arizona.edu) for signature
2022-03-22 - 0:21:43 AM GMT

📄 Email viewed by Henry Werchan (werchanh@arizona.edu)
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2022-03-22 - 2:48:22 AM GMT- IP address: 104.28.112.4

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Signature Date: 2022-03-23 - 11:58:24 PM GMT - Time Source: server- IP address: 150.135.165.83

Agreement completed.

2022-03-23 - 11:58:24 PM GMT

THE UNIVERSITY OF ARIZONA

BUDGET PROJECTION FORM

Name of Proposed Program or Unit: Information Management

	Projected			
Budget Contact Person: Henry Werchan	**1st Year** 2022 - 2023	**2nd Year** 2023 - 2024	**3rd Year** 2024 - 2025	
METRICS				
Net increase in annual college enrollment UG	15	30	50	Expected increase in certificate seeking students
Net increase in college student credit hours (SCH) UG	270	540	900	Enrollment increase * 3 hours per course * 6 courses
Net increase in annual college enrollment Grad				
Net increase in college SCH Grad				
Number of enrollments being charged a Program Fee				
New Sponsored Activity (MTDC)				
Number of Faculty FTE		1		New faculty member hired in year 2
FUNDING SOURCES				
Continuing Sources				
UG Activity Informed Budgeting (AIB) Revenue	86,400	172,800	288,000	=SCH UG * $500 * 64%
Grad AIB Revenue				
Program Fee Revenue (net of revenue sharing)				
F and A AIB Revenues				
Reallocation from existing College funds (attach description)				
Other Items (attach description)				
Total Continuing	$ 86,400	$ 172,800	$ 288,000	
One-time Sources				
College fund balances				
Institutional Strategic Investment				
Gift Funding				
Other Items (attach description)				
Total One-time	$ -	$ -	$ -	
TOTAL SOURCES	$ 86,400	$ 172,800	$ 288,000	
EXPENDITURE ITEMS				
Continuing Expenditures				
Faculty		70,000	70,000	
Other Personnel				
Employee Related Expense		22,330	22,330	Assume 31.9% of salary
Graduate Assistantships				
Other Graduate Aid				
Operations (materials, supplies, phones, etc.)				
Additional Space Cost				
Other Items (attach description)				
Total Continuing	$ -	$ 92,330	$ 92,330	
One-time Expenditures				
Construction or Renovation				
Start-up Equipment				
Replace Equipment				
Library Resources				
Other Items (attach description)				
Total One-time	$ -	$ -	$ -	
TOTAL EXPENDITURES	$ -	$ 92,330	$ 92,330	
Net Projected Fiscal Effect	$ 86,400	$ 80,470	$ 195,670	

New Academic Program
PEER COMPARISON

Select three peers (if possible/applicable) for completing the comparison chart from ABOR-approved institutions, AAU members, and/or other relevant institutions recognized in the field. The comparison programs are not required to have the same degree type and/or title as the proposed UA program. Information for the proposed UA program must be consistent throughout the proposal documents. Minors and Certificates may opt to include only 2 peer comparisons.

Program name, degree, and institution	Information Management Certificate University of Arizona	Peer 1 University of Nevada Las Vegas	Peer 2 Virginia Commonwealth University
Current number of students enrolled	█████████████████	Unknown	Unknown
Program Description	The 18-credit hour certificate in Information Management provides students with experience and training in information management and prepares them for careers in database administration, data analysis and engineering, web development and information architecture. Students learn the foundations of database systems, web design and programming, data visualization and analysis, as well as methods for visualizing, managing, and analyzing information. Courses include: APCV 302 Statistics in the Information Age, APCV 320 Computational Thinking and Doing, APCV 360 Database Management Fundamentals, APCV 361 Data	https://www.unlv.edu/certificate/management-information-systems The Certificate in Management Information Systems (MIS) program is a graduate certificate program, designed for individuals who want to acquire specific MIS skills to meet the needs or demands of their workplace. Courses include: Information Systems Strategy, Information Systems Project Management, Systems Analysis, Modeling and Design, Data Management	http://bulletin.vcu.edu/undergraduate/business/information-systems/information-systems-certificate/ The Certificate in Information Systems is designed for students who hold bachelor's degrees in fields other than information systems and who wish to continue their education in information systems but are not pursuing a graduate degree at this time. Courses include: Legal Environment of Business, Information Technology Infrastructure, Programming, Systems Analysis and Design, Database Systems,

	Analysis and Visualization, CSCV 460 Database Design		Fundamentals of Data Communications, Information Systems Planning and Project Management, Projects in Information Systems
Target Careers	Database administrator Data analyst Data engineer Web developer Information architect	Business Analyst System Developer	Systems analyst Database administrator Project manager
Emphases? (Yes/No) List, if applicable	No	No	No
Minimum # of units required	18	12	24
Pre-Major? (Yes/No) If yes, provide requirements.	No	No	No
Special requirements to declare/gain admission? (i.e. pre-requisites, GPA, application, etc.)	None	None	None

Additional questions:
1. How does the proposed program align with peer programs? Briefly summarize the similarities between the proposed program and peers, which could include curriculum, overall themes, faculty expertise, intended audience, etc.

The proposed program provides a broader and more comprehensive coursework that better aligns with known and emerging industry requirements in this area. The other programs do have some similarities with the proposed certificate coursework, although they lack the breadth and scope of the proposed certificate, primarily from a curriculum standpoint.

2. How does the proposed program stand out or differ from peer programs? Briefly summarize the differences between the proposed program and peers, which could include curriculum, overall themes, faculty expertise, intended audience, etc.

   The other programs do have some similarities with the proposed certificate coursework, although they lack the breadth and scope of the proposed certificate, primarily from a curriculum standpoint. The proposed certificate program provides better targeted scope and context to the subject area.

3. How do these differences make this program more applicable to the target student population and/or a better fit for the University of Arizona?

   The breadth and scope of the proposed program result in an offering that better maps to published job requirements. The coursework has been carefully selected to ensure a broad coverage of the subject matter.