

**Student Systems ISTIP
Project Control Document
Degree Audit Replacement System**



1. Introduction & Purpose

1.1. Purpose

The ISTIP Degree Audit Enhancement project has two initiatives:

1. Enhancements I and II to the current Degree Audit system (Current System)
2. Development of the replacement Degree Audit system (Replacement System)

This Project Control Document is written to establish the scope, schedule and assumptions for the Replacement System. The Enhancements I work has already been specified and is scheduled to be completed by 10/31/2000. The Enhancements II work is related to the Student Records Database Rationalization project and will be specified after that project is delineated.

1.2. Audience

The audience for this document is the Degree Audit Stakeholder group:

- Administrative Information Systems
- College of Letters and Science
- Graduate Division
- Registrar's Office
- Student Academic Services
- Undergraduate Admissions

Since the Replacement System is intended to meet campus needs, other campus representatives will be involved at the direction of the Student Executive Group, the Student ISTIP Management Group, or the Degree Audit Stakeholder group.

1.3. Description and History of Project

In the winter of 1997 a functional review was undertaken to determine exactly what the University needed in an improved Degree Audit System. Robert Kilgore chaired a committee of individuals from all major campus constituencies (College Honors, Graduate Division, Law School, Undergraduate Admissions, Arts & Architecture, Theater Film & TV, Engineering, Registrar and AIS). This group began meeting that spring and reviewed the needs of each area, discussed problems in the current system and reviewed alternatives. The culmination of this effort was the Degree Audit and Advising proposal dated July 1998. It reiterated the findings of the group and recommended that the best alternative was for UCLA to build a new custom designed degree audit system. In September, 1999

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the ISTIP Student Systems Implementation Plan allocated \$510,000 for the Replacement System.

1.4. Summary of Work to Date

The Degree Audit Stakeholders analyzed commercially available audit systems and determined that four of the five systems were unsuitable for use at UCLA:

- On Course – not detachable from SCT’s integrated Banner system (a complete student record system)
- Degree Navigator – extremely limited functionality with very small market share
- Exeter – degree audit runs only as part of their integrated student record system
- PeopleSoft – degree audit component under development will run as part of their integrated student record system.

After careful consideration of the effort involved in developing an entirely custom system, the system architect and key ISTIP stakeholders concluded that a system combining the strengths of each approach – commercial system and custom development - would serve the campus best. The most popular audit system – DARS from Miami University could be used as a “back-office” processing engine while we would develop custom procedures, additional functionality, and the web interface to meet UCLA’s broad and complex requirements.

This architecture has the potential to substantially reduce long-term programmer efforts, broaden the number of coding “experts”, and leverage existing training resources. The Degree Audit Stakeholders unanimously approved the combined approach, favoring over both a full custom development and the full adoption of a commercially available package.

DARS is currently available as both a mainframe-based system and a client server based system but the user base – and support – is rapidly migrating to the client/server system. The mainframe-based system had been evaluated and rejected in 1997 as being functionally unusable. The Stakeholders recommend the client/server version of DARS and all references in this Project Control Document are to the client/server version. The architecture for the system is diagrammed on the following page.

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1.5. Description of Approach to Managing Changes to Scope, Schedule, and Assumptions

The Degree Audit Stakeholders are responsible for identifying and managing changes to scope, schedule and assumptions. Changes will be logged in the Issues Tracking Database – <http://istip.ais.ucla.edu/DA.htm>. The Stakeholders are responsible for bringing changes to the attention of management: the monthly ISTIP Management Group or the quarterly Executive Committee. All approved scope changes will be reflected in the Project Control Documents and work plans.

2. Scope

2.1. Introduction/Description of Bounds of Project

The Replacement System will be designed to produce certified degree audits for all UCLA students: undergraduate, graduate and professional (except Medical and Dental which maintain their own course records). It will be used to articulate transfer credit for UCLA students, providing information to the student record database and supporting enrollment logic.

Through the application of technology, it is feasible that the way students plan their course work could be changed. Combining course information and degree requirements, it will be possible to produce a student ‘plan’ of courses leading to graduation, opening the potential of advance enrollment or reservation in courses, providing data to schools and college for advance course planning, and potentially improving our ‘quarters to graduation’ measure.

2.2. Project Objectives

The replacement system will be designed to enable the accurate auditing of all students who utilize the central functions of the Office of the Registrar. It will support distributed application of the most common substitutions and exemptions and will automate a significant part of the ongoing manual application of transfer course articulation. Additionally, it will provide the necessary resource to inform course planning at the school, college, and department level. The system will be developed so as to allow for the creation of the “Student Plan” which if supported by central campus offices will significantly reduce the “quarters to graduation” measure for undergraduates.

2.2.1 UCLA Student Web Access

- Students will be able to request and receive graphic representations of their progress towards their degree including university requirements, general college or school requirements, major requirements, minor requirements,

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concentration requirements, and/or specialization requirements, as appropriate

- Students will also be able to model alternative majors, minors, concentrations and/or specializations via the web
- Students will be able to request a list of classes which will optimize meeting unfilled requirements
- Students will be able to develop and “fine tune” a plan for enrolling in classes through graduation
- Students will be able to request information on how a non-UCLA course will transfer to UCLA for schools where UCLA has established articulation agreements. We expect that this feature could also be used for prospective students.
- Students, and prospective students, will be able to check for lower division major preparation course requirement that are satisfied by non-UCLA courses where UCLA has established articulation agreements.

2.2.2 UCLA Counselor Web Access

- Counselors will be able to request and receive graphic representations of their students progress towards degree including their university requirements, general college or school requirements, major requirements, minor requirements, concentration requirements, and/or specialization requirements as appropriate
- Counselors will be able to model their students into alternative majors, minors, concentrations and/or specializations via the web
- Counselors will be able to request a list of classes which will optimize their students remaining requirements
- Counselors will be able to approve or deny changes to their students plan for enrolling in classes through graduation
- Counselors will be able to use simplified web screens to grant standardized substitutions and exemptions for their students

2.2.3 UCLA Admissions Access

- Staff will establish and maintain, via the web and the mainframe School Index File (SIF), a school reference master file which includes demographic, calendar, unit and grading system information for postsecondary institutions that UCLA students and applicants attend.
- Based on transfer articulation rules encoded and maintained by the Undergraduate Admissions Office the majority of transfer credit will be able to be systematically articulated into UCLA equivalencies or title credit for non-UCLA courses at postsecondary institutions where UCLA has established articulation agreements.
- Transfer credit will be applied based on standardized tests (AP, IB), combinations of coursework from one or multiple schools, and the completion

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of standardized sets of courses, e.g. IGETC, for satisfying UC requirements and UC reciprocity.

- Staff in the Undergraduate Admissions Office will review and update transfer credit articulation agreements on a regular and ongoing cycle based on changes in acceptable transfer credit courses approved by UC and postsecondary institutions' catalogues.
- Staff in the Undergraduate Admissions Office will enter individual transfer credit courses for new, re-entering, and continuing students and certify that the credit is appropriately entered and applied to UCLA courses and requirements. Undergraduate Admissions Evaluation staff will make manual adjustments to transfer credit as needed.
- Both raw source transcripts as well as articulated transfer work will be stored and be available for ad-hoc analysis.

2.2.4 UCLA Degree Auditor Access

- Degree auditors will be able to request and receive graphic representations of degree candidates' program completion status including their university requirements, general college or school requirements, major requirements, concentration requirements, minor requirements, and/or specialization requirements as appropriate
- Degree auditors and other interested parties will be able to query the degree audit system to determine the program completion status of students with a selected degree expected term, major, minor, specialization, etc.
- Degree auditors will be able to identify shortages on degree requirements and transmit this information to students in a timely fashion
- Degree auditors will be able to monitor the completion of outstanding requirements throughout a student's expected term of graduation and, if necessary, in subsequent terms
- Degree auditors will be able to use simplified web screens to input standardized substitutions and exemptions for degree candidates
- Degree auditors will be able to certify students for graduation based upon the output of the degree audit system, with minimal need for detailed review and/or departmental approval
- Degree auditors will be able to award degrees and notify students of degree completion in a more automated fashion

2.2.5 UCLA Administrative and Curriculum Planners in the Schools and College Access

- All course work and requirements would be available to support enrollment planning and projections.

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2.3. People and Processes Covered

2.3.1. People and Organizations

- AIS staff
- College staff
- Graduate Division staff
- Professional School staff
- Registrar's staff
- Students
- Undergraduate Admissions staff

2.3.2. Processes - *this section will be completed in the "Proof of Concept" phase*

2.3.2.1. UCLA Student Web Access

- 2.3.2.1.1. .
- 2.3.2.1.2. .
- 2.3.2.1.3. .
- 2.3.2.1.4. .
- 2.3.2.1.5. .

2.3.2.2. UCLA Counselor Web Access

- 2.3.2.2.1. .
- 2.3.2.2.2. .
- 2.3.2.2.3. .
- 2.3.2.2.4. .
- 2.3.2.2.5. .

2.3.2.3. UCLA Admissions Access

- 2.3.2.3.1. .
- 2.3.2.3.2. .
- 2.3.2.3.3. .
- 2.3.2.3.4. .
- 2.3.2.3.5. .

2.3.2.4. UCLA Degree Auditor Access

- 2.3.2.4.1. .
- 2.3.2.4.2. .
- 2.3.2.4.3. .
- 2.3.2.4.4. .
- 2.3.2.4.5. ..

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2.3.2.5. UCLA Administrative and Curriculum Planners in the Schools and College Access

- 2.3.2.5.1. .
- 2.3.2.5.2. .
- 2.3.2.5.3. .
- 2.3.2.5.4. .
- 2.3.2.5.5. .

2.3.2.6. Technical Transition from Current System

- 2.3.2.6.1. .
- 2.3.2.6.2. .
- 2.3.2.6.3. .
- 2.3.2.6.4. .
- 2.3.2.6.5. ..

2.3.2.7. Deployment of New System.

- 2.3.2.7.1. .
- 2.3.2.7.2. .
- 2.3.2.7.3. .
- 2.3.2.7.4. .
- 2.3.2.7.5. .

2.4. Volumes of Data Covered

Current volume of data.

Major codes	=	297
Minor codes	=	51
Requirements	=	1,780 sets (current and historical)
Course Usage Groups	=	15,488 groups of course requirements
Course Usage List	=	314,876 course entries

This volume would grow as the system supports other schools.

Anticipated new volume of data:

Articulation Agreements

California Community College	=	107
California State Universities	=	23
UC Campuses	=	8
Other Schools (4 year/out-of-state/international)	=	300+

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2.5. Impact to the Mainframe

Process	Changes	Impact																		
TRCD screen	<p>Current:</p> <ul style="list-style-type: none"> • Transfer credit detail screen. • Updates ADM vsam table on the mainframe. • Transfer course articulation is not automated. <p>Volume of course entries transferred during the school year 98-99.</p> <table style="margin-left: 40px;"> <thead> <tr> <th>Term</th> <th>Equivalencies</th> </tr> </thead> <tbody> <tr> <td>Applied</td> <td></td> </tr> <tr> <td>98F</td> <td>69,370</td> </tr> <tr> <td>99W</td> <td>3,680</td> </tr> <tr> <td>99S</td> <td>12,605</td> </tr> <tr> <td>991</td> <td>308</td> </tr> <tr> <td>992</td> <td>254</td> </tr> <tr> <td></td> <td>-----</td> </tr> <tr> <td></td> <td>86,217</td> </tr> </tbody> </table> <p>Replacement:</p> <ul style="list-style-type: none"> • Windows application, probably written in VB or Access, or a combination of both. • Updates ADM vsam file on the mainframe. The mainframe connection will be determined during the “proof of concept” phase. • Transfer course articulation is automated. • Articulation engine runs on DAUD server. • TCA Agreements coding will be developed on the DAUD server. (see 2.4 for volume of data) 	Term	Equivalencies	Applied		98F	69,370	99W	3,680	99S	12,605	991	308	992	254		-----		86,217	<p>The same number of users from Admissions and Registrar’s that uses the TRCD will be using the new web screens to enter transfer courses from transcripts; however, data will be sent to the mainframe only after it is finalized in DARS.</p> <p>The number of CICS connections that is no longer used because TRCD will no longer be used will be replaced by a still-to-be-determined connection to the mainframe.</p> <p>The design of the replacement system changes the way the function is accomplished. Intensive logic and articulation processes will be executed on the DAUD server.</p> <p>The impact to the mainframe is neutral. There will be no increase in demand for mainframe disk space.</p>
Term	Equivalencies																			
Applied																				
98F	69,370																			
99W	3,680																			
99S	12,605																			
991	308																			
992	254																			

	86,217																			
TCA agreements encoding	<p>Current: N/A</p> <p>Replacement:</p> <ul style="list-style-type: none"> • Powerbuilder screens that come with DARS Darwin. • No data transfer to the mainframe. • Business logic runs on DAUD server. 	<p>Encoded TCA agreements will be saved on the DAUD server. The mainframe will not keep the data.</p> <p>This is a new process and the mainframe is not touched. There is no impact to the mainframe.</p>																		

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<p>DAUD encoding</p>	<p>Current:</p> <ul style="list-style-type: none"> • Vsam files and CICS screens on the mainframe. • Business logic runs on the mainframe. See 2.4 for volume of data <p>Replacement:</p> <ul style="list-style-type: none"> • Powerbuilder screens that come with DARS Darwin. • No data transfer to the mainframe. • Business logic runs on DAUD server. 	<p>The same number of users from the college and schools will be using the new system.</p> <p>This function will completely run under the DAUD server. DARS will be the engine.</p> <p>The impact is positive. Mainframe work is off-loaded to DAUD server. The demand for disk space will diminish.</p>
<p>DPR Requests</p>	<p>Current:</p> <ul style="list-style-type: none"> • VSAM files and CICS screens on the mainframe for modeling. • Web screens for modeling. • Business logic runs on the mainframe. • 37,000 students and 200 counselors can request audit reports thru URSA Online, counselor desktop and CICS screens. • Batch requests can be as much as 600 to 2000. <p>Replacement:</p> <ul style="list-style-type: none"> • Web screens. • Data will be transferred from the mainframe to the DAUD server. The mainframe connection will be determined during the “proof of concept” phase. • Business logic runs on DAUD server. 	<p>The same number of users will be making the requests. The student’s transfer information and UCLA coursework will be transferred from the mainframe to the DAUD server. The mainframe connection will be determined during the “proof of concept” phase.</p> <p>The impact is positive. Most mainframe work is off-loaded to DAUD server. The demand for disk space will decrease.</p>

2.6. Budget

The budget to be covered by ISTIP funding is detailed on the following page. In addition, all the participating units will devote significant staff resources - non-billable support - to the project. This expense will be reported in the monthly project reports as well as the billed expense so the total cost of the project can be monitored.

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2.7. Exclusions

Project scope excludes

- Development of EDI/Speede/OCR for transfer credit processing
- CAS – DARS Course Applicability System

3. Schedule

3.1. Schedule

3.1.1. Analysis of Replacement Options: 3/15/2000 - 7/15/2000

3.1.2. Project Planning and System Design 7/15 - 11/30/2000

3.1.2.1. “Proof of Concept”

3.1.2.1.1. Install system in test environment

3.1.2.1.2. Evaluate functionality vs. need

3.1.2.1.3. Complete specifications for development

3.1.2.1.4. Finalize costs and time frame for development

3.1.2.1.5. Obtain authorization and funding to proceed

3.1.3. System Development and Implementation: 12/1/2000 – To be determined

3.2. Major milestones and deliverables

Major Milestones	Major Activities	Major Deliverables
Install system in test environment	<ul style="list-style-type: none"> • Identify and acquire DARS server • Acquire DARS software • Recompile Cobol modules • Configure test/development server • Configure DARS system software • Configure Oracle database • Develop naming standards • Deploy client software • Test and fine tune the test environment • Get and send data between server and mainframe 	<ul style="list-style-type: none"> • Successful integration of the server into CIS infrastructure • Error free running of DARS • Successful interaction between Oracle, database client software, and mainframe

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Major Milestones	Major Activities	Major Deliverables
<p>Evaluate functionality vs. needs</p>	<ul style="list-style-type: none"> • Encode sample major • Encode sample articulation rules • Code several different types of school in the Master School Reference table (different academic calendars, grading systems, unit conversion rules) • Code at least 80% of the transfer credit articulation rules for at least one California Community College • Code partial articulation rules for at least two other postsecondary institutions • Enter transfer credit for several test students to evaluate transfer credit rules and application to degree audit • Identify the strategy for connecting DARWIN TCA components to UCLA course files for validating course information • Identify the strategy for connecting DARWIN TCA components to UCLA student data for validating information • Determine whether there are any DARWIN system utilities available for: <ul style="list-style-type: none"> ➤ batch loading of the school master reference table data, and source (non-UCLA) institution course lists ➤ reports for verifying and printing TCA agreements ➤ custom reporting tools • Design conversion strategy • Complete specifications for development: screens, reports, interfaces, conversion <p>Finalize costs and time frame for development.</p>	<ul style="list-style-type: none"> • Functioning test major • Functioning test articulation rules for California Community College and postsecondary institution • Functioning test Master School Reference table • Functioning test degree audit • Specifications for screens, reports, interfaces, and conversion • Project Control Document for System Development
<p>Request authorization and funding to proceed</p>	<p>Present to ISTIP Executive Committee and Management Group.</p>	<ul style="list-style-type: none"> • Approval and funding

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3.3. Dependencies

Success depends on receiving an appropriate budget, the availability and performance of vendors and UCLA project personnel, and the functioning of equipment and software.

Data for the DAUD server, such as course and class tables will come from the SRDB database of the Registrar's office which will depend on the successful implementation of Data Propagator and Datajoiner between AIS and Registrar's office.

3.4. Critical Staffing

The success of the project is jeopardized to the extent that any of the following critical resources are not available to support development of the system.

Development of Replacement System*		
Staff Member	Availability	Potential Disruptions to Availability
AIS		
Francisco De Guzman and/or Farid Ibrahim	0.5 FTE	None anticipated
L&S		
Eric Splaver	0.25 FTE	Production responsibilities
Robert Kilgore	0.75 FTE	Other projects
Programmers - 2		Inability to hire/retain
Encoders - 2		Inability to hire/retain
Registrar's Office		
Randy Cirilo and/or Larry Inks	0.25 FTE	Production responsibilities and development including ISTIP SR0 Database Rationalization project
Undergraduate Admissions		
Kathleen O'Kane and/or Daniel Fogg	0.25 FTE	Admissions Selection 12/1 – 5/1 (each year), production responsibilities, and participation in the ISTIP Undergraduate Admissions Database Rationalization project
Sharon Abramson and/or Judy Gorian	0.25 FTE	Meeting Admissions Selection timelines (12/1 – 5/1 each year)
Articulation Analyst/Encoder	1.00 FTE	Equivalent FTE will be hired to backfill trained staff to develop, code and test articulation rules

*includes ISTIP billed and non-billed personnel

3.5. Contingencies

Continue with current degree audit system.

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4. Assumptions

4.1. Planning

Assume technical architecture - attached

4.2. Roles and responsibilities

In general, College Information Services and AIS will be responsible for the technical success of the system. The Degree Audit partners will be responsible for confirming system requirements, and reviewing/approving functional specifications, testing, and authorizing moving the enhancements to production.

Alfonso Luna	Administrative Information Services
Anita Cotter	Office of the Registrar
Bonnie Allen	Administrative Information Services
Cathy Lindstrom-Jacobson	Office of the Registrar
Daniel Fogg	UARS
Eric Splaver	College of Letters & Science
Francisco de Guzman	Administrative Information Services
John Sandbrook	College of Letters & Science
Judy Gorian	UARS
Kathleen O’Kane	UARS
Larry Inks	Office of the Registrar
Penny Hein-Unruh	College of Letters & Science
Randolph Cirilo	Office of the Registrar
Robert Kilgore	College of Letters & Science
Sharon Abramson	UARS

4.3. Staffing – availability, skill relevance, etc.

All organizations will continue to provide the same resources to the project. Sharon Abramson, Randy Cirilo, Francisco de Guzman, Daniel Fogg, Judy Gorian, Robert Kilgore, and Eric Splaver are critical to the project.

4.4. Third party commitments

DARS – Miami University - Oxford, Ohio

4.5. User and transaction volumes

Students (37,000) and counselors (200) have online access to Degree Audit and can request audit reports through the web. Batch requests can be as much as 600 to 2000 UIDs per run.

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4.6. Technologies – hardware and software

4.6.1. Degree Audit “back-office” Engine:

Darwin Client V2.1.0r6
Darwin Server V2.1.1

4.6.2. Database: Oracle 8i Release 3 (announced June 28, 2000)

4.6.3. OS Server: IBM AIX RS/6000

4.6.4. Minimum Client configuration recommendation:

IBM-compatible pc, minimum of 64Mb RAM
Running either Windows 95 or Windows NT
Recommended 400 Mhz speed
30Mb Hard disk free space

4.6.5. Minimum Server configuration recommendations:

30Mb Hard disk free space
If multiple daemons will be running, add 4.5Mb for each daemon
Minimum of 128Mb RAM
1 or more processors

4.6.6. Software:

Database client libraries, C compiler, Microfocus Cobol, Cobol/SQL pre-compiler for Oracle, GNU maker, Perl, Powerbuilder

4.6.7. Test Environment:

TSOASIS and all the attached data and communication services.

4.7. Risks

- Attracting and retaining staff in the units involved
- Expanding the scope of work beyond that specified in this document
- Ability to effectively test this development work among the development partners

4.8. Funding - Covered in Section 2.6

4.9. Contingencies

Assume we would continue to run and maintain the current degree audit system until the replacement system is ready.

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5. Signature Block

John Sandbrook
Assistant Provost, College of Letters and Science

Date

Eric Splaver
Project Architect, College of Letters and Science

Date

Robert Kilgore
Degree Audit, College of Letters and Science

Date

Anita Cotter
Associate Registrar, Office of the Registrar

Date

Larry Inks
Associate Registrar, Office of the Registrar

Date

Kathleen O’Kane
Student Systems Manager, Student Academic Services

Date

Francisco De Guzman
Project Lead, AIS

Date

Bonnie Allen
Project Manager, AIS

Date

Karen Melick
Systems, Network & Architecture Manager, AIS

Date

Jack Ewart
Data Center Services, AIS

Date

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6. References & Attachments - None