English Version

September 2024 Addendum to the 2024-2025 University Student Catalog

The Jala University Catalog Addendum for 2024 - 2025 is a summary of policy and academic program changes. For the 2024-2025 academic year, the changes reflected in this addendum is effective immediately. Please use information contained here as the most accurate and up-to-date catalog information regarding courses and programs.

Change to total credit hours for Bachelor of Commercial Software Engineering with a Concentration in Design in Architecture

Current Program Credit Hours: 130
General Education Hours: 37
Core/Major Degree Hours 93

New Program Credit Hours: 140
General Education Hours: 32
Core/Major Degree Hours: 108

Degree Course Credit Revision (10 credits modified)
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Course Code	Course Name	Current Credits	New Credits	Category
ICA-216	Software Quality Engineering 1	3	2	Core
APR-221	Programming 4	2	3	Core Lab
ISO-223	Software Development 4	2	2	Core Lab
ISO-313	Software Development 5	3	2	Major Lab
ISO-322	Software Development 6	4	2	Major Lab
ASO-414	Mobile Application Development	3	2	Major
TDG-412	Research Project on Software Development 1	2	4	Core Int
TDG-413	Research Project on Software Development 2	2	4	Core Int
TDG-423	Research Project on Software Development 3	2	4	Core Int
TDG-424	Research Project on Software Development 4	2	4	Core Int

General Education and Degree Course Removal (16 courses removed)
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Course Removals

Course Code	Course Name	Credits	Category
IRE-314	Systems Programming	3	Major
IRE-315	Unix Administration	1	Core Lab
ASO-316	Unix Software Development 1	1	Major Lab
ISO-323	Software Development Management 1	1	Major
ASO-326	Human-Centered Interaction Design	3	Major
FHC-324	Social Issues and Professional Practice	2	Gen Ed
ASO-327	Asynchronous Programming	1	Major Lab
APR-421	Machine Learning	2	Major Lab
COM-422	Technical Documentation	1	Major Lab
FHC-425	Management and Leadership	3	Gen Ed
ASO-426	Interaction of Technological Devices	2	Major Lab
ASO-427	Cloud Development	1	Major Lab
ICA-226	Software Quality Engineering 4	2	Core Lab
ISO-411	Software Development Management 2	1	Major
ASO-415	System Integration	1	Major Lab
ASO-416	System Scalability	1	Major Lab

General Education and Degree Course Removals
Pg. 49-65 course description removal

Course Descriptions Removals

Course Code	Course Name	Description	Credits
IRE-314	Systems Programming	This course introduces students to operative elements involved in the execution of a program or service.	3
IRE-315	Unix Administration	The development process today requires some tools to coordínate and monitor the teamwork progress. These tools usually run-on devices which are available and accessible all team members. Each team has its own characteristics, and each group may require this basic infrastructure. This course helps students build the necessary skills to install and set up a service required by the team.	1
ASO-316	Unix Software Development 1	Today's operating systems offer a wide range of services to software engineers. Applications such as databases and browsers	1

		use these services. For most software engineers, these services are usually hidden. However, to improve an application performance, it is necessary to look into the operating system and understand how it works in order to detect possible hurdles. This course introduces students to this level of the operating system.	
ISO-323	Software Development Management 1	This course leads students through the whole software development process. By now, students have already learned about the different roles involved and are ready to approach the process from a global perspective.	1
ASO-326	Human-Centered Interaction Design	The ultimate purpose of a computing system is to be used in the context for which it was created. Users must feel comfortable when interacting with the system and must boost their performance. This course introduces students to the concepts and techniques to improve the quality of the Human-Computer Interaction.	3
FHC-324	Social Issues and Professional Practice	As technology evolves and invades our daily lives it is apparent that we get used to it. We discover technology and want more help from it to help us to be more efficient in the tasks that we are confronted every day. This evolution can do too much. It might involve disclosure or use of nonauthorized personal information. It becomes important that the education of the software engineer involves professional practices.	2
ASO-327	Asynchronous Programming	Synchronous programming has limitations when it comes to the effective use of modern processors containing many processing units. Asynchronous programming, on the other hand, offers an alternative to deploy the processing resources. This course deals with the asynchronous model and its implementation to help students understand the differences between both models.	1
APR-421	Machine Learning	Even though software consists in a set of programs which perform the exact logic defined by a developer, some applications today do not follow a predefined behavior, but respond according to their own learning.	2

COM-422	Technical Documentation	This course introduces students to the basic elements of written technical communication of software products. It is aimed at helping students understand a document's audience, its form and style according to its purpose.	1
FHC-425	Management and Leadership	There is technical management of the organization of the software development life cycle. But there is also management of the resources associated to the growth of the team/group/company. Specially if someone is interested in growing his/her own company. This course is thought of a series of talks of people from the industry that expose how their different experiences evolved from ideas to software companies.	3
ASO-426	Interaction of Technological Devices	Data-processing application run not only on classic computers operated by end users (consisting of a screen, keyboard, and mouse), but also on a series of new devices ranging from smartphones to watches, remote controls, smart cars, etc. This interaction must be taken into account before coding software or building hardware.	2
ASO-427	Cloud Development	This course introduces students to cloud computing.	1
ICA-226	Software Quality Engineering 4	Team testing iterations must be documented according to industry standards and policies. With commercial software projects being usually international, documents must be accurate and persuasive. In this course, students work on advanced defect reporting.	2
ISO-411	Software Development Management 2	This course introduces students to methods, techniques and tools to monitor the software development process.	1
ASO-415	System Integration	This course introduces students to the fundamentals of software integration.	1
ASO-416	System Scalability	This course introduces students to the fundamentals of system scalability.	1

Addition of New Courses for Commercial Software Engineering Concentration Design and Architecture
(300-400 level courses)

New Course Codes and Course Descriptions

Course Name	Programming 7
Course Code	CSPR-471
Credits	3
Description	This course provides an in-depth exploration of asynchronous programming, concurrency, and parallelism, all of which are essential for modern software development. Students will learn the principles and practices of writing efficient, concurrent, and parallel code using specific programming languages and frameworks. The course will equip students with comprehensive knowledge and skills in async programming patterns, particularly in JavaScript, TypeScript, and C#. Key subjects include Threading and Multi-threading, Synchronization Mechanisms, Asynchronous Programming Fundamentals, Async/Await, Multi-Core and Multi-Processor Systems, and Parallel Programming. Throughout the course, students will engage with real-world scenarios and complete an individual capstone project, allowing them to apply their knowledge and skills in practical settings. This course is part of a 7-part series on Programming, providing a robust foundation and advanced understanding of the field.

Course Name	Software Projects and Startups
Course Code	CSP-486
Credits	3
Description	This course offers an in-depth exploration of software project management and startup development, essential for a successful career in software development. Students will learn principles and best practices for managing software projects and building startups, covering key subjects such as Solution Design and Architecture, Project Management, Planning, Scheduling, Budgeting, Agile Methodologies, Lean Principles, Fast Prototyping, Risk Management, Quality Assurance, Startup Funding, Technical Decision Making, Continuous Improvement, and Scaling Strategies. Engaging with real-world scenarios, students will gain practical insights and hands-on experience. The course equips students with the skills needed to navigate software project management and the startup environment, emphasizing effective timelines, budgeting, and quality assurance. An individual capstone project allows students to apply their knowledge in practical settings.

Course Name	Software Architecture 1
Course Code	CSAR-351
Credits	3
Description	This course introduces the fundamentals of software architecture and the role of a software architect. It emphasizes the importance of software architecture and covers various architectural styles. Students will explore software architecture patterns, clean architecture principles, and key system properties. The course examines the relationship between architecture and the software development lifecycle (SDLC), architectural design and thinking, and how to represent and document software architecture, including the use of architecture decision records. Additionally, students will complete an individual capstone project to apply their knowledge. This course is part of a 4-part series on Software Architecture, providing a robust foundation and advanced understanding of the field.

Course Name	Software Architecture 2
New Course Code	CSAR-364
Credits	3
Description	This course covers best practices and the comprehensive design process for software architecture. Key topics include coupling, modularity, decomposition, and essential design principles. The course also addresses critical aspects of system performance, such as vertical and horizontal scalability, resiliency, and fault tolerance. Additionally, students will explore introductions to business analysis and domain-driven design (DDD). Throughout the course, students will engage with real-world scenarios and complete an individual capstone project to apply their knowledge and skills. This course is part of a 4-part series on Software Architecture, providing a robust foundation and advanced understanding of the field.

Course Name	Software Architecture 3
New Course Code	CSAR-484
Credits	3
Description	This course delves into system integration and enterprise architecture, focusing on essential topics such as microservices, back pressure, and using APIs (GRPC, REST, GraphQL) for system integration. Students will also learn about using queues for system integration, ensuring interoperability, and integrating legacy systems. Additionally, the course covers system migration strategies, equipping students to handle complex architecture and

	integration challenges in various IT environments. Throughout the course, students will engage with real-world scenarios and complete an individual capstone project to apply their knowledge and skills. This course is part of a 4-part series on Software Architecture, providing a robust foundation and advanced understanding of the field.

Course Name	Software Architecture 4
New Course Code	CSAR-486
Credits	3
Description	This course offers a comprehensive introduction to cloud computing and its pivotal role in modern software architecture. Students will learn the design and development of cloud-native applications and gain an understanding of distributed systems principles. Key topics include the 12-Factor App methodology, which outlines best practices for building scalable and maintainable applications. The course provides an in-depth exploration of various service models, including SaaS, IaaS, PaaS, and BaaS. Additionally, students will delve into emerging trends in software architecture, such as event-driven architectures, time-series databases (TSDBs), and edge and fog computing. Throughout the course, students will engage with real-world scenarios and complete an individual capstone project to apply their knowledge and skills. This course is part of a 4-part series on Software Architecture, offering a robust foundation and advanced understanding of the field.

Course Name	Internet of Things
Course Code	CSIO-353
Credits	2
Description	This course provides a hands-on introduction to the Internet of Things (IoT) in the context of software development. Students will learn what IoT is, its uses, how it's implemented, and the key components of IoT systems. The course also covers how to manage and analyze IoT data, highlighting the importance of security and privacy. Students will get to work with different industry-standard tools, protocols, and software frameworks for developing IoT projects, with real-world applications like home automation and data monitoring. Plus, students will complete an individual capstone project on IoT topics.

Course Name	User interface and User experience Design
Course Code	CSUX-364
Credits	3
Description	This course offers a hands-on introduction to user interface (UI) and user experience (UX) design. Students will explore the relationship and differences between UI and UX, their significance in software development, and the entire design process from research to implementation. Key topics include user research, wireframing, prototyping, and testing. Students will also learn about responsive design for various devices and platforms and effective collaboration with developers using industry-standard tools. Additionally, students will complete an individual capstone project on to apply their UiUx knowledge.

Course Name	DevOps
Course Code	CSDV-246
Credits	2
Description	This course provides an in-depth understanding of essential principles, practices, and tools for modern software development and operations and it centers on a hands-on project inherited from SD4. Starting with basic DevOps concepts and emphasizing a collaborative culture and Agile methodologies. Additionally, this course covers technologies for provisioning, containerization, CI/CD workflows. By the end of this course, students will be proficient in DevOps processes, enhancing software quality, accelerating delivery cycles, and improving operational efficiency.

Course Name	Data Science
Course Code	CSDS-352
Credits	2
Description	In this course, you will explore the fundamentals of data science and machine learning, developing skills essential for analyzing and interpreting complex data sets. You'll learn to use Python for data manipulation, visualization, and implementing machine learning algorithms. The course covers both supervised and unsupervised learning techniques, including regression, classification, and clustering. You'll also gain hands-on experience with model evaluation and validation. Through practical sessions and capstone projects, you'll apply these concepts to real-world problems, enhancing your problem-solving abilities and preparing you for data-driven decision-making in various industries.

Course Name	Deep Learning
Course Code	CSAI-353
Credits	2
Description	This course builds on machine learning fundamentals to dive into advanced topics in deep learning and generative AI. You'll study various neural network architectures, including CNNs, RNNs, and transformers, and their applications in image, text, and sequence data processing. The course also covers cutting-edge generative AI techniques, such as GANs, VAEs, and diffusion models, used in creating synthetic data and content. Through hands-on projects, you'll gain practical experience in transfer learning, fine-tuning pre-trained models, and working with large language models. This course will equip you with the skills to tackle complex AI challenges and stay current with rapidly evolving AI technologies.

Course Name	Systems Administration
Course Code	CSSA-266
Credits	3
Description	This course provides an in-depth introduction to system administration for Unix and Windows systems, building on a foundational understanding of operating systems and networking. Students will develop the skills needed to effectively manage and maintain these systems, including upgrading, installing, and configuring application software and hardware. Key topics covered in the course include: System Management, Technical Support and Troubleshooting, Security Management, Monitoring and Performance Tuning, Network and Infrastructure Administration, ITIL and service management principles, Automation, and Scripting The course places a strong emphasis on practical skills, including system integration, performance tuning, and ensuring system resilience. Students will engage in real-world scenarios and complete an individual capstone project, allowing them to apply their knowledge in a practical setting.

Beginning January 2025, the Commercial Software Engineering Concentration Design and Architecture Program will move to Version 2 of the program with new courses as well as a new course code allocation. New degree courses are listed in red.

Current Course Code	New Course Code	Course Name	Term
General Education			
FMA-111	MATH-111	Logic	T1
FMA-112	MATH-112	Discrete Math	T1
FMA-113	MATH-113	Calculus 1	T1
FMA-121	MATH-124	Linear Algebra	T2
FMA-212	MATH-126	Calculus 2	T2
FMA-213	MATH-233	Statistics	T2
FHC-129	HIST-111	History of Software Engineering	T1
COM-118	COMM-118	Communication I	T2
COM-127	COMM-127	Communication 2	T3
COM-219	WRIT-219	Writing & Composition 1	T3
COM-229	WRIT-229	Writing & Composition 2	T4
Programming & Algorithmics			
APR-114	CSPR-111	Programming 1	TI
APR-123	CSPR-124	Programming 2	T2
APR-211	CSPR-231	Programming 3	T3
APR-221	CSPR-244	Programming 4	T4
APR-311	CSPR-351	Programming 5	T5
APR-321	CSPR-364	Programming 6	T6
-	CSPR-471	Programming 7	T7
APR-312	CSPR-366	Programming Languages	T6
APR-222	CSAL-244	Algorithmics 1	T4
APR-314	CSAL-351	Algorithmics 2	T5
Software Development			
ISO-115	CSSD-113	Software Development 1	T1
ISO-124	CSSD-125	Software Development 2	T2
ISO-214	CSSD-232	Software Development 3	T3
ISO-223	CSSD-245	Software Development 4	T4
ISO-313	CSSD-352	Software Development 5	T5
ISO-322	CSSD-365	Software Development 6	T6
Operating Systems			
IRE-116	CSOS-112	Operating Systems 1	T1
IRE-125	CSOS-124	Operating Systems 2	T2
Computer Networks			
IRE-215	CSNT-232	Computer Networks 1	T3
IRE-224	CSNT-245	Computer Networks 2	T4
Database			
BDA-117	CSDB-112	Database 1	T1
BDA-126	CSDB-125	Database 2	T2
Software Quality Engineering			
ICA-216	CSSQ-231	Software Quality Engineering 1	T3
ICA-217	CSSQ-233	Software Quality Engineering 2	T3
ICA-225	CSSQ-246	Software Quality Engineering 3	T4

Dev Ops and Systems Administration			
-	CSDV-246	DevOps	T4
-	CSSA-366	Systems Administration	T6
Artifical Intelligence			
-	CSDS-352	Data Science	T5
-	CSAI-353	Deep Learning	T5
Software Architecture			
-	CSAR-351	Software Architecture 1	T5
-	CSAR-364	Software Architecture 2	T6
-	CSAR-484	Software Architecture 3	T8
-	CSAR-486	Software Architecture 4	T8
Web & Mobile			
ASO-325	CSWB-366	Web Development	T6
ASO-414	CSWB-473	Mobile Application Development	T7
UIX User Interface and User Experience			
-	CSUX-364	User Interface and User Experience Design	T6
Internet of Things			
-	CSIO-353	Internet of Things	T5
Research Project on Software Development and Software Projects & Startups			
TDG-412	CSRP-471	Research Project 1	T7
TDG-413	CSRP-472	Research Project 2	T7
TDG-423	CSRP-484	Research Project 3	T8
TDG-424	CSRP-485	Research Project 4	T8
-	CSRP-486	Software Projects & Startups	T8

Revised Attendance Policy and Excused Absence Criteria

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Procedure: Attendance Monitoring

Students must attend the synchronous Teams masterclass and lab portion of all courses to earn full attendance points.

- Attending 100% of all sessions = no point deduction penalty
- Cumulative singular course absences (combination of the same masterclass and lab) of 25% to 39% of the total number of sessions = deduction of 5% off the final course grade.
    - 8-week courses have on average 23 sessions (masterclass 1x per week; labs 2x per week)
    - 10-week courses have on average 30 sessions (masterclass 1x per week; labs 2x per week)
    - Communication, Writing, and History General Education courses only have 8 sessions (1x per week masterclass with no associated lab course)
- Absences of more than 40% of total course session = Withdraw Fail (WF) grade

Excused Absences

*If a student has missed 3 or more cumulative singular course sessions (the same masterclass and lab) and has a documented extenuating circumstance that contributed to the absences, the student can apply for consideration of an excused absence for that course. Approved excused absences are not counted against mandatory attendance requirements. At the same time, the excused absence does not relieve a student from their responsibility for completing any course work assigned during their absence. Faculty may take appropriate action if the student fails to satisfactorily complete any alternative assignment or examination.

Students must submit the Excused Absence Request form within 5-days of university absences.

Extenuating circumstances for consideration for an excused absence include:

- Serious student illness, injury, hospitalization, pregnancy
- Death of an immediate family member (parent, spouse, sibling)
- Jury duty or other government obligation
- Legal citation/court appearance
- Interruption of internet connectivity
- Extreme personal life emergency (life altering/life threatening)
- Force Majeure
- *Religious observance (this is an exception to the minimum 3 day)
- *Authorized University Activities (this is an exception to the minimum 3 day)

Note: short term illness (less than 3 days), doctor appointments, personal appointments, or work conflicts are not eligible for excused absences.

Conflict of Interest in Research Policy

Jala University supports faculty, staff, and students' participation in scholarly research as well as industry professional partnerships for research activities. These partnerships are established for mutually beneficial reasons and could produce knowledge, research and technology that will help to meet societal needs. In certain circumstances, relationships with outside entities can create, or appear to create conflicts of interest. A Conflict of Interest depends on the situation and how it can be perceived, not necessarily on the character of the actions of an individual. While having a Conflict of Interest does not imply wrongdoing or inappropriate activity, conflicts do require review to ensure it does not improperly influence, or appear to improperly influence, how Jala University research is proposed, conducted, and/or reported. Research should be conducted as to avoid or minimize conflicts of interest, and if apparent conflicts of interest arise the individual must disclose and respond appropriately.

Policy Guidelines

Investigators and research personnel are responsible for identifying and disclosing Conflicts of Interest. Investigators and/or research personnel should evaluate potential conflicts of interest on an ongoing basis and disclose promptly and in advance, financial interests and outside activities that could lead to a potential Conflict of Interest. This responsibility arises when a new proposal is submitted; a new relationship is established with an outside entity; or when a prior relationship with an outside entity change.

If a Conflict of Interest is found to be feasible, Jala University will require the implementation of a management plan designed to mitigate or eliminate the conflict. If the university determines that the conflict cannot be effectively mitigated or eliminated through the implementation of a management plan, the research will not be allowed to proceed until the conflict can be resolved.

Research personnel are not permitted to begin any research activity when a Conflict of Interest exists, until they report the conflict and receive a written determination from the Chief Academic Officer, or their designee, on how to manage it. Research personnel also are not permitted to begin an external activity that would create a Conflict of Interest until they report the conflict and receive a written approval to proceed with the research activity.

Financial interests and outside activities that must be disclosed include equity interests, payment for services from a research sponsor or entity that may benefit economically from the outcome of the research that totals $3000 or more U.S. dollars when aggregated over 12-month period; or personal receipt of intellectual property rights directly from a research partner who may benefit economically from the outside research.

After a financial interest or outside activity related to research is disclosed, Jala University reviews the disclosure on a case-by-case basis to determine whether the disclosure constitutes a Conflict of Interest, and if so, how to appropriately mitigate the Conflict of Interest in a way that preserves the integrity and objectivity of the research. *Faculty must keep in mind that certain financial interests and outside activities may create a Conflict of Interest that cannot be effectively mitigated or managed.*

Management plans implemented to mitigate a Conflict of Interest may contain additional measures, including but not limited to:

- Public disclosure of relevant significant financial interests
- Recusal of the conflicted individual from data collection and/or data analysis for the relevant research project
- Reduction of involvement or role for the conflicted individual for the relevant research project
- Removal of the conflicted individual from the research project.
- Termination of student involvement, if applicable, in the research project or appointment of an independent monitor
- Modification of the research plan
- Divestiture of significant financial interests
- Severance of the relationship that create actual or potential conflicts

The researcher must accept the management plan in writing before beginning work on the project.

Effective Date

The information contained in this addendum complements or replaces information found in the 2024-2025 University Student Catalog. The following changes reflect current information about Jala University and are effective September 1, 2024, unless otherwise noted.