3DEXPERIENCE® FOR ACADEMIA
DIGITAL PLATFORM TO PREPARE THE WORKFORCE OF THE FUTURE
“The 3DEXPERIENCE platform in the cloud changes several educational paradigms. Data is stored on a single platform, and students can access CAD designs anytime, anywhere, for engineering as well as manufacturing planning work. Our students are excited by the interactive working universe offered by this collaborative tool, just as they are by social networks. For them, it’s natural and intuitive.”

— Frédéric XERRI, Louis Armand Technical College, France

“By providing students with world-class tools, we are building knowledge that will prepare them to excel in their professions, differentiating themselves as entrepreneurs or exceeding the expectations of the companies with which they will work.”

— Professor Marcello Nitz, Pro-Academic Rector of Mauá Institute of Technology, Brazil

“The seamless digital engineering processes, combined with cyber-physical production systems, made possible thanks to the app- and cloud-based tools in the 3DEXPERIENCE for Academia platform offers huge potential in education and research. Students learn all about the strengths of integrated data management, cross-functional collaboration and innovative digital and virtual factory capabilities for developing hybrid work systems and managing smart products based on highly diverse customer requirements in self-steering production systems.”

— Professor Vera HUMMEL, ESB Reutlingen, Germany
3DEXPERIENCE® FOR ACADEMIA

3DEXPERIENCE for Academia, the most advanced software for product and learning innovation, is available in the cloud or on-premises, within your own operating environment. Both options bring new capabilities to educators and students who want to experience the engineering practices of industry leaders for increased employment opportunities in the new global economy. Years of collaboration with educators and students across a wide variety of institutions and disciplines has led to a flexible, tailored set of learning solutions. 3DEXPERIENCE for Academia encompasses a suite of world-class integrated applications:

- CATIA® for product design
- DELMIA® for digital manufacturing
- SIMULIA® for realistic simulation
- ENOVIA® for collaborative innovation
- 3DEXCITE® for high-precision rendering and interactive immersion

PREPARING THE WORKFORCE OF THE FUTURE

3DEXPERIENCE for Academia is an advanced platform designed for a variety of industries, enabling the new practices of the industry renaissance. It offers the ideal infrastructure for bringing industry practices into learning. Encompassing comprehensive CAD, CAM and CAE capabilities, the platform provides powerful solutions for managing collaborative work and joint innovation. Modular, it can be adopted either in full, or just as a specific component.

3DEXPERIENCE for Academia comes as a multidisciplinary social collaboration baseline. It can be extended with dedicated packages supporting educational, research and organizational processes in Design and Engineering, Systems Engineering, Manufacturing and Production, Architecture and Civil Engineering, and Project Management. New packages address advanced simulation and seamlessly create high-quality VR content for digital marketing and procedural learning.

Via an intuitive, web-based user interface, educators can easily create local or international collaborative environments, such as student projects or exams, and assign roles to participants. Students can start projects on campus, continue at home and discuss issues over online communities or screen-sharing. The platform ensures that they always access the latest version of their work.
Faster project-centric learning and lab virtualization

**3DEXPERIENCE** for Academia is the ideal platform for project-centric learning, providing an integrated, distributed universe for methods such as Conceive—Design—Implement—Operate (CDIO®) or Project (Problem) Based Learning (PBL). At any time, educators can remotely monitor projects, manage idea maturity and assign grades. Collaboration is made easy and intuitive for teachers, researchers, students and industry mentors. Project mentors can facilitate more projects without compromising on the attention needed by students.

**3DEXPERIENCE** for Academia provides a proven environment for deploying digital labs involving realistic virtual 3D equipment, coupled with two-way interaction with real remote devices. The platform opens up new horizons for innovative educational practices, such as distant learning, MOOCs and flipped learning.

A gateway to the industry renaissance

**3DEXPERIENCE** for Academia is constantly evolving to support national manufacturing initiatives with enhanced capabilities for teaching, learning and advancing the most promising industry practices—from the Internet of Things (IoT) to digital value chains, additive manufacturing, smart buildings and intelligent farms. It provides institutions with a credible up-to-date universe to support applications for educational research grants.

A natural breakthrough

Current users of CATIA and DELMIA V5 or V6 will find all the features they are familiar with in the **3DEXPERIENCE** for Academia on a single navigational interface, together with a host of new capabilities, enabling students to contribute to the ongoing transition by employers to experience-based innovation. Special offers and various instruments are available to facilitate gradual migration, quick learning and updating of existing educational content.
New flexible options

The 3DEXPERIENCE platform is structured as sets of roles corresponding to typical industry activity profiles. The specific ‘academia’ package builds on packages that combine broad sets of the same roles.

All packages are available in four sizes (S, M, L, XL) to meet the needs of diverse secondary and higher education institutions:

- Small—up to 30 users
- Medium—up to 100 users
- Large—up to 300 users
- Extra Large—up to 900 users

The 3DEXPERIENCE platform is available in the cloud or on premise. Both options offer equivalent functionality, including social and collaborative capabilities. And both provide the same scope for scaling from focused to multi-purpose use.

With the cloud option, pricing includes all use and service costs, and any configuration is easily scalable. Suitable storage capacity is available depending on customer needs.
**BUSINESS AND INDUSTRY INNOVATION**

**Entry point for all learning activities**

*Business and Industry Innovation* is the base-line block designed for institutions interested in social collaboration and research.

**Engineering and much more**

With its dashboard capabilities, *Business and Industry Innovation* enables project follow-up, hands-on exercises and technology watch via RSS feeds. Engineering and non-engineering disciplines can access a set of professional-grade platform capabilities to connect their activity through a private social network, regardless of the nature of their deliverables, from reports to essays, multimedia documents to design or simulation files.

**Collaboration at the heart of teaching and peer learning**

- Integrated online communities: blogs, Q&As, surveys, idea maturity management
- Instant collaboration enablement: chat, mockup co-design and co-review
- Definition of digital workspaces tailored to teaching strategies: hands-on sessions, student projects, parts library, access list management
- Collaborative management capabilities to control and synchronize assemblies, resources and teamwork

**Advanced search engine**

Find parts, community posts or documents, whatever their type and wherever they are located.

**Cloud access**

The platform is accessible from anywhere, anytime, inside and outside the institution: in the lab, at home and on the go.
**3DEXPERIENCE ESSENTIALS**

3DEXPERIENCE Essentials is a broad application set built on the Business and Industry Innovation baseline, encompassing a vast set of Dassault Systèmes solutions.

The ideal basis for universities or technical colleges to support their transition to project-based or student-centered learning, 3DEXPERIENCE Essentials provides a complete digital framework for team-based ideation, contextual learning, collective innovation, solution creation and various methods for project evaluation.

3DEXPERIENCE Essentials includes advanced ENOVIA capabilities for configuration management, requirements management, change management and compliance processes.

The Essentials package bundles a large subset of CATIA design functions and enables conceptualization and detailing of virtually any type of object.

Using DELMIA digital manufacturing tools makes machining, robotics and rapid prototyping an integrated exercise, ensuring manufacturability of designs and streamlining of manufacturing programming.

Right-first-time practices are reinforced through mechanism simulation and associative stress analysis using SIMULIA and ergonomics simulation.

The fundamental capabilities of additive manufacturing are built-in for powder-bed fusion additive manufacturing, including nesting, automated support design and laser path optimization.

Converters to and from other applications, as well as 3D printing output formats, are available for exchanging data with various partners and devices.
A fundamental enhancement in 3DEXPERIENCE Essentials is the possibility to create hybrid assemblies mixing new data with legacy models from version 5. New functionalities can so be applied on existing courses examples without re-creating them. Projects started in V5—for instance students’ competitions—can easily progress in the up-to-date version.

EMBEDDED ROLES
Requirements Manager
Project Team Member
Classification Manager
Change Management
Configuration Management
Multiple converters to and from others applications
Design Review Manager
Volume Computation
Manufacturing Engineer
Shopfloor Equipment Engineer
NC Prismatic Programmer
NC Prismatic and Turning Programmer
NC Milling Machining Programmer
Process Simulation Analyst
Plant Layout Designer
Ergonomics Specialist
Robotics Offline Programmer
Robotics Engineer
Cutting Tool Technologist
Mechanical Designer
Mechanism Simulation Designer
Creative Designer
Marketing Experience Reviewer
Packaging Copy and Artwork Manager
3D Component Designer for PLM services
Structural Designer
Product Release Engineer
Project Planner (NEW)
Shop Floor Equipment Simulation Engineer (NEW)
**3D INNOVATOR**

*3D Innovator* is a brand new intuitive set of web applications, running in a browser and available on the cloud as a service.

Its modelling environment and built-in design guidance are a perfect solution for freshmen enrolled in Mechanical Engineering.

Students in Art, Design and Architecture domains will use an algorithmic approach to design complex, repetitive and non-regular shapes such as organically and bio inspired shapes. *3D Innovator* highly automated generative modelling allows them to design, explore and validate multiple variants of such shapes. Combining graph-based visual scripting and interactive 3D-modeling, with the ability to use one or the other interchangeably at any time, *3D Innovator* is ideal to unleash students’ creativity.

Both applications benefit from the collaboration and product lifecycle management capabilities of the platform. Student projects are always up-to-date on the cloud and securely accessible from anywhere on any device.
DESIGN AND ENGINEERING

Design and Engineering extends 3DEXPERIENCE Essentials with the capability to automate the modeling of parts produced using specific manufacturing processes, such as sheet metal, stamping, composites and molding or routed systems comprising pipes, tubes and wires. In addition, Design and Engineering automates the associative design of tooling, which is required to actually produce such parts and systems.

Essential to teaching modern development practices in industries such as foundries, automotive and aerospace, Design and Engineering is also an ideal solution for learning and teaching industrial design and styling, including realistic on-the-fly rendering and ambiance control. It brings advanced capabilities in support of processes that are critical in several national manufacturing initiatives: topological optimization in support of additive manufacturing, an end-to-end packaging solution and various simulation capabilities for plastic injection parts, fluid dynamics, composite optimization and static, frequency, thermal, buckling and modal dynamics analysis of fabricated structures.

Powerful process automation tools are provided to template routine work and reuse design expertise.

EMBEDDED ROLES

3DMaster Designer
Mechanical and Shape Designer
Sheetmetal Designer
Reverse Shape Optimizer
Product Industrial Designer
Virtual and Physical Prototyper
Product Optimization Designer
Template Designer
Composites Engineer
Mold and Tooling Designer
Best Practices Designer
Electrical 3D Systems Designer
Electrical Harness Manufacturing Engineer
Fluid 3D Systems Designer
Class A Modeler
Class A Expert
Esthetical Shape Modeler
Fasteners Designer
Hydroformed Sheetmetal Designer
Composites Braiding Designer
Structural Package Designer
Function Driven Generative Designer
Ergonomist
Structural Professional Engineer
Composites Simulation Engineer
Fluid Dynamics Engineer
Stamping Die Face Designer
Product Enclosure Designer
Product Experience Presenter
Plastic Injection Engineer
Structural Engineer
Human Experience Designer (NEW)
**SYSTEMS ENGINEERING**

*Systems Engineering* combines a rich set of functions essential for concurrently designing and simulating various types of objects using models simultaneously optimized for geometry and function. Indispensable for modeling modern electromechanical systems, simulating their behavior and optimizing smart products, *Systems Engineering* comes with numerous libraries representing the physics of diverse technologies and phenomena. Open to other simulation systems through standard interfaces, it provides a comprehensive multi-physics design, simulation and optimization framework for any mechatronic or systems engineering course.

Real electromechanical systems, whether programmable or not, can be completely virtualized, connected and controlled using the solution, reflecting software-in-the-loop and hardware-in-the-loop methodologies and enabling a ‘virtual twin’ approach, a central practice of the fourth industrial revolution.

These features open up the immense field of virtual labs, teleoperated learning devices and ‘flip lab’ practices.

Capabilities are provided to increase integration across the different levels of system representations (requirements, functional, logical, physical). This structured environment creates an ideal framework for learning the principles and practices of systems architecture and tradeoffs.

**EMBEDDED ROLES**

Dynamic Systems Designer  
Systems Schematic Designer  
Mechatronic Systems Designer  
Systems Behavior Optimization  
Systems Flexible Bodies Library  
Systems Flight Dynamics Library  
Systems Simulink Export  
Systems Real Time Execution Export  
Systems FMU Export  
Systems Human Comfort Library  
Systems Battery Library  
Systems Engines Library  
Systems HVAC Library  
Systems Electrified Power Train Library  
Systems ClaRa Plus Library  
Systems Brushless DC Drives Library  
Systems Electric Power Library  
Systems Fluid Power Library  
Systems Hydrogen Library  
Systems Thermal Library  
Systems VeSyMA Library  
Systems VeSyMA Suspensions Library  
Systems VeSyMA Powertrain Library  
Systems Wind Power Library  
Systems Fluid Dynamics Library  
Systems Pneumatic Library
**ADVANCED SIMULATION**

The **Advanced Simulation** role extends the simulation capabilities within domain-specific roles, such as Design and Engineering for Academia, providing engineers, students and educators with the ability to collaboratively solve complex engineering problems spanning multiple scales and disciplines.

Use feature-based parametric modeling tools to quickly iterate on designs or direct modeling tools to modify and repair geometry without CAD expertise. Leverage automated modeling methods to efficiently create finite element models of large assemblies. Perform realistic thermal and mechanical simulations on complex mechanisms that include contact and material nonlinearities. Evaluate the buckling, frequency, or dynamic response to service loads. Improve designs and understand natural phenomena by simulating steady state and transient flows for mach numbers up to 2.5. Include effects like surface tension, cavitation, rotating objects, mixing fluids, or conjugate heat transfer.

The **Advanced Simulation** role provides access to the same advanced tools used by simulation experts across all industries, in a format that is aligned with student needs and skill levels.

**SIMULATION RESEARCHER**

By default, the simulation capabilities available in the academic portfolio come with limitations that are suitable for use in an academic education context. The Simulation Researcher Role removes these limitations on a named-user basis, providing the academic researcher with access to unlimited model sizes and to user subroutines, identical to what’s available in the commercial release.
The Marketing Experience package brings virtual product and process models into real, interactive experiences for test users, marketing targets, product users and various types of learners.

The package offers a complete pipeline to simplify and IP-protect engineering data, animate it on scripts, contextualize it in a realistic universe, enrich it with physical behaviors, compose it into interaction scenarios and disseminate it on a variety of devices, including HTC® VR headsets.

The package also provides HPC-enabled high-definition and high-precision rendering capabilities to generate emotionally intense renderings from design data.

By creating a digital continuum between designs created by engineering students and interactive consumers of those designs, the Marketing Experience package opens up powerful perspectives in various disciplines:

- **Design students** can quickly submit their innovations to users, experience engineers and judging panels
- **Engineering students** can place their designs in usage situations and interact online with users or project supervisors
- **Marketing students** can learn and apply numerous aspects of digital marketing
- **Manufacturing and industrial engineering students** can produce interactive procedural learning for operators
- **Any types of learners** can benefit from interactive 3D educational productions

*Available in the Cloud only*
MANUFACTURING AND PRODUCTION

Manufacturing and Production extends 3DEXPERIENCE Essentials to digital manufacturing for industrial or manufacturing engineering programs.

This extended set of functions enables the design, simulation, automation and control of part production as well as assembly-level production. From offline robot programming to production of ergonomic operator instructions, optimization of automated production cells and balancing of complete lines, Manufacturing and Production provides students with an ideal environment for experiencing the methods practiced and required by various industries, from small facilities to large multi-plant configurations.

Essential in any curriculum targeting smart manufacturing, the package brings powerful functions to further automate the design of assembly processes, especially in heavy industry, shipbuilding, construction, automotive and aerospace, where large numbers of assembly points must be managed seamlessly, robot work cells must be optimized and routed systems must be optimally configured.

Additive manufacturing preparation is strongly supported at various stages, helping optimize manufacturing strategies and communication with actual powder-bed fusion manufacturing machines.

EMBEDDED ROLES

Time Study Analyst
Assembly Simulation Expert
NC Multi-Axis Milling and Turning Programmer
Process Planner
Work Instructions Designer
Robotic Native Program
Validation Specialist
NC Machine Code Validation Specialist
Ergonomist
Work Safety Engineer
NC Multi-Axis Milling Programmer
Industrial Engineer
Drill and Fill Engineer
Fastener Process Planner
Heavy Industry Assembly Planner
Heavy Industry Process Planner
Robotics Arc Engineer
Robotics Surface Engineer
Robotics Spot Engineer
Heavy Industry Structure Manufacturer
Heavy Industry Fluidic Manufacturer
Powder Bed Programmer
Material Deposition Programmer
Distortion Checker for Additive Manufacturing
Robotics Optimization Expert
ARCHITECTURE AND CIVIL ENGINEERING

Architecture and Civil Engineering is a set of capabilities that further expand the powerful collaborative framework of 3DEXPERIENCE Essentials for the construction and offshore and shipbuilding industries.

Especially targeting the early project stages, it provides architecture schools and civil engineering departments with an integrative building information modeling (BIM) environment to harmonize interactions between creative architects, architectural engineers and fabrication and construction engineers. It now provides a range of automation tools for rapid building concept design.

Powerful methods for conducting multi-disciplinary trade studies help automate the design and optimization of the overall structure of ships, buildings, dams, stadiums and bridges. Enhanced steel structure analysis and routed systems modeling capabilities further facilitate structure, HVAC, MEP, fluid and electrical engineering.

Architecture and Civil Engineering uses proven clash management and design automation functionality to produce highly valid designs. It familiarizes students with essential practices, such as template-based reuse methodologies and weight and cost management, promoting compliance with environmental regulation and building and fabrication requirements.

Architecture, shipbuilding and civil engineering educators will benefit from the application’s 2D and 3D capabilities, together with a range of data conversion tools, to engage students with the collaborative methods needed by the often fragmented, multi-stakeholder organizations encountered in their industries.

EMBEDDED ROLES

- Civil Engineer
- Template Designer
- Architectural Detail Designer
- 3DMaster Designer
- Steel and Equipment Layout Designer
- Space Allocation Architect
- Accommodation Designer
- Structure Designer
- Structural Analysis Engineer
- Concept Building Designer
- Building Structures Designer
- 3D MEP Designer
- Steel Structure Engineer
- Converter for CityGML
- Converter for Civil3D
- Converter for Revit
- Converter for IFC
Governance and Project Management

Governance and Project Management extends Business and Industry Innovation with numerous organizational and work process-related tools. It targets any educational activity where the development of technical management skills is a desired learning outcome. It also provides educators with powerful tools to control and manage their teaching and research processes.

A groupwork and deliverable management framework is provided to automate academic work processes, conduct multidisciplinary and potentially multi-year projects, such as engineering student competitions, or to teach typical engineering management procedures. A classification management application is included to enable smart libraries, structuring the discovery and practice of the rigorous “build-or-buy” methods that drive critical behaviors in modern engineering.

Governance and Project Management also provides a non-geometric option for modeling systems requirements, similar to the one available in the Systems Engineering solution, reflecting the role of systems architects who do not need to model the functional, logical or physical aspects of a system.
A FULL RANGE OF PROGRAMS AND INSTRUMENTS TO ACCELERATE IMPLEMENTATION
In addition to the 3DEXPERIENCE platform itself, various services are available for institutions, educators and students to accelerate adoption, increase learning efficiency and improve employability.

1. 3DS academy website
The universal entry point for becoming a member of the Dassault Systèmes community and benefiting from a broad array of additional services to enrich the software experience. The website offers students and educators access to wide-ranging content, such as online training materials, innovative educational experiences, news, contests and more.

2. Peer Learning EXPERIENCE
Peer Learning EXPERIENCE is an innovative online learning solution where you can learn engineering, design and project management efficiently. Learning courses are co-developed by an international community of educators working in expert committees. The Peer Learning EXPERIENCE immerses participants together with peers in an interactive journey along learning paths and reproduces classroom-style co-learning techniques. It is now directly accessible by any user of the 3DEXPERIENCE.

3. Project-centric learning
ILICE (Inspire, Learn, Innovate, Create, Evaluate) is a free downloadable, customizable pre-configuration for the 3DEXPERIENCE to quick-start project-centric learning by taking immediate benefit of the platform’s social capabilities and deploying it in project activities. ILICE makes it easy for project supervisors to give teams all the attention they need, promote ideation activities, ensure student use of modern project management and design methods and rationalize competence-based evaluation.

4. Certification
As the rate of technological change accelerates, the Dassault Systèmes Certification Program is a key benchmark for customers and partners who want to make smarter recruitment and employee engagement decisions. Dassault Systèmes certified resources help drive business success for customers by optimizing the deployment of Dassault Systèmes solutions.

To learn more, visit ACADEMY.3DS.COM
Our 3DEXPERIENCE® platform powers our brand applications, serving 11 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the 3DEXPERIENCE® Company, provides business and people with virtual universes to imagine sustainable innovations. Its world-leading solutions transform the way products are designed, produced, and supported. Dassault Systèmes’ collaborative solutions foster social innovation, expanding possibilities for the virtual world to improve the real world. The group brings value to over 250,000 customers of all sizes in all industries in more than 140 countries. For more information, visit www.3ds.com.