NUS National University of Singapore | ISS

Gear up for a Digital Future

Embark on a one-year transformational journey

Graduate Diploma in **Systems Analysis**

Available as Stackable Graduate Certificate Programme in Digital Solutions Development

Graduate Diploma in **Systems Analysis**

The Graduate Diploma in Systems Analysis (GDipSA) programme is designed for non-IT graduates looking to make an IT career conversion and enter the tech industry. IT graduates and professionals who wish to advance their careers and stay relevant by equipping themselves with the latest IT knowledge and skills are also welcome to apply.

This is a full-time, one-year programme. Alternatively, you can take a stackable pathway through the Graduate Certificate in Digital Solutions Development, a series of five certificates that can be stacked towards the Graduate Diploma in Systems Analysis.

Students who embark on this will be exposed to lectures, workshops, laboratory sessions, projects, and a five-month internship. The numerous projects that are part of the syllabus aim to equip students with the necessary foundation to code, test, implement, and troubleshoot IT solutions covering web and mobile platforms. By the end of the programme, graduates will be equipped with sought-after technical skills and valuable soft skills.

Recognition

- Top student is awarded the IBM Gold Medal & Book Prize
- NUS-ISS Book Prize
- Accenture Best Industrial Attachment Project

Who Should Apply

- Non-IT graduates who are keen to carve a new career in the Infocomm industry
- IT graduates looking to gain practical experiences
- Mid-career professionals who want to keep themselves relevant

Fees & Subsidy

For students who are Singapore Citizens and Singapore Permanent Residents, the tuition fees are subsidised by the Singapore government (through the Ministry of Education, MOE). International students are not eligible for MOE subsidy.

The tuition fees are reviewed yearly and, thus, subjected to revisions.

Admission Criteria

- Bachelor's degree from a recognised university
- Demonstrate proficiency in the English Language (written and spoken)*
- Some work experience preferred
- All applicants are required to take an aptitude test. Shortlisted applicants will also need to attend an interview. Foreigners are welcome to apply.

*Applicants who graduated from universities where English is not the medium of instruction should submit TOEFL (Test of English as a Foreign Language) or IELTS (International English Language Testing System) score as evidence of their proficiency in the English language.

TOEFL	IELTS
• Paper-based test (580) • Computer-based test (237) • Internet-based test (85)	Result of 6.0

How to Apply

All applicants are required to apply online via the Graduate Admission System (Coursework). Find out more about the programme at our info sessions.

Visit https://www.iss.nus.edu.sg/graduate-programmes for more details. We conduct in-country entrance tests and interviews in selected countries.

Programme Schedule

GDipSA students must complete all the Graduate Certificates under the Stackable Graduate Certificate Programme in Digital Solutions Development as well as a Capstone Project and Internship.

Graduate Certificates in Digital Solutions Development

WEB APPLICATIONS (30 DAYS)

Learning Outcomes

- Software application development
  - Fundamental software development using Java and OO concepts
  - SQL programming
- Full stack web software development
  - Web Application Development (e.g. Spring Boot, Spring MVC, REST, Thymeleaf, ReactJS)
  - Java Persistence Architecture, Object-Relational Mapping (e.g. JPA, Hibernate)
  - Deployment on Cloud (e.g. Google Cloud, Kubernetes etc.)
  - Asynchronous Solutions, Reactive Framework (e.g. WebFlux)
- Handling large and complex data
  - Introduction to Big Data
  - Big Data (e.g. SCALA/DataBricks)

Job Roles

Software Engineer, Programmer on Java platform

DESIGN (21 DAYS)

Learning Outcomes

- Product definition and scoping with user experience design technique
- Data-driven and user-driven design consideration
- Complete product definition with functional and non-functional requirements
- Information presentation and user interface design for mobile, web and dashboard using GenAI
- Modelling data for machine learning and enterprise business purposes
- Mapping functional requirements to data models
- Design software architecture for IoT, Cloud Architecture and Containerisation
- Manage a project using agile practices and deliver the project as a product release

Job Roles

Systems Analyst, Business Analyst

MACHINE LEARNING APPLICATIONS (12 DAYS)

Learning Outcomes

- Python and Data Manipulation using Numpy, Pandas, Matplotlib and Seaborn
- Feature Engineering which includes data processing, dimension reduction, selection of features and generation of new features
- Regression and Classification which includes models such as linear, logistic, classification and time-series
- Clustering using K-Means, Hierarchical and DBSCAN and their effectiveness
- Text Processing which includes Text featurisation, feature vectors and Cosine similarity
- Neural Networks which include data regression, classification using Neural Networks and Image Processing with Pillow
- Intelligent Systems including building recommendation systems, Spam Filtering Systems and Sentiment Analysis systems using Naive Bayes
- Introduction to various Generative Models (e.g. GANs) and their architectures, which includes the understanding of their training processes and the applications for Generative AI
- Publish services as REST API with Python

Job Roles

Machine Learning Engineer

MOBILE APPLICATIONS (20 DAYS)

Learning Outcomes

- Frontend Development
  - Design and develop user interfaces of mobile applications for optimal user experience and interactionSQL programming
  - Creation of Layouts and Notifications
  - Using UI Controls and WebView
  - Implement the logic and functionality of mobile applications
  - Leverage Activities, Intents, Services and Broadcast Receivers for programme control
  - Using the Kotlin Programming Language to create Android apps
  - Using Android Studio as the Integrated Development Environment
- Backend Development
  - MVC architectural design of the backend systems
  - Requests handling via Controllers, Middlewares and Dependency Injection
  - Managing data and integrating with databases via LINQ and Entity Framework
  - Automatic data-mapping via Model Binding
  - Integrating with client-side technologies for user-interactions (includes JavaScript, AJAX, HTML and CSS)
  - Utilising server-side technologies for dynamic pages, request routing and session management
  - Leverages on .NET Framework and the C# programming language

Job Roles

Software Developer or Programmer on Mobile Web and Android platforms

AGILE SOFTWARE DELIVERY (6 DAYS)

Learning Outcomes

- Integrate Agile software delivery, DevSecOps and MLOps to improve software development and deployment processes
- Implement automated security testing in the CI/CD pipeline to identify and address security vulnerabilities early in the development process
- Apply continuous monitoring practices to both traditional software components and machine learning models to enable the detection and response to security incidents and performance issues
- Apply version control to both code and machine learning models to track changes effectively
- Automate the deployment of models using MLOps practices, ensuring reproducibility and consistency in different environments
- Foster a culture of continuous improvement where teams learn from incidents, update security measures, and enhance models based on feedback

Job Roles

DevOps Engineer, MLOp Engineer

CAPSTONE PROJECT & INTERNSHIP

Get hands-on experience designing and building an integrated IT solution to address business needs from start to finish. The Capstone Project also prepares you for the industrial attachment as you gain problem-solving, project management, teamwork, and leadership skills.

The five-month internship is a crucial component of the programme. Students get attached to the IT departments of companies ranging from banking and finance to healthcare, telco, and government ministries. Translate the IT knowledge to business use cases and contribute to the digital transformation of your assigned internship company.

Learning Outcomes

- Develop the versatility and flexibility to handle the unpredictable challenges of user requirements, project schedules and end-product expectations of any real-life project.
- Learn to adapt quickly to new working cultures, pick up new technical skills and domain knowledge where required, propose feasible IT solutions, and develop and deliver them to users' satisfaction.

Job Roles

Software Developer or Programmer on the JAVA and Mobile Web platforms, Machine Learning Application Engineer, Systems Analyst, Business Analyst

What to expect:

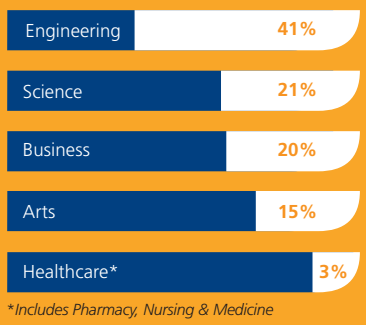
- Case Studies
- Assignments, Tests & Examinations
- Projects
- Role-playing
- Live Demo
- Workshops

Our Students are Gaining Industry Experience at Top Organisations

At NUS-ISS, we actively partner with leading companies across sectors to offer meaningful internship opportunities to our GDipSA students. These internships provide valuable real-world exposure, allowing you to apply your skills, gain hands-on experience, and build professional connections in the tech industry.

- Accenture
- Bank of China
- Central Provident Fund
- GovTech
- Huawei
- Inland Revenue Authority of Singapore
- Infineon
- KAPPS Consulting
- KeyFields
- NTT Data
- NCS
- Oracle
- Ryde Technologies
- SIMTECH
- Singtel
- SSMC
- SingHealth
- ST Engineering

STUDENT PROFILE



*Includes Pharmacy, Nursing & Medicine

CAREER SERVICES

90%

of our students secure employment upon graduation.

At NUS-ISS, our GDipSA programme is designed not only to give you a strong IT and academic foundation but also to ensure your career progression.

Our dedicated Career Services team provides the following vvalue-added support to help you make the most of your learning journey.

- Career Exploration
- Job Search Assistance
- Networking Opportunities

Stackable Graduate Certificate Programme in Digital Solutions Development

The NUS-ISS Stackable Graduate Certificate Programme in Digital Solutions Development is a series of stackable certificates professionals can take while pursuing their careers. The series of certifications starts with the compulsory first certification programme: Graduate Certificate in Digital Solutions Development - Web Applications. Upon completing the first certification, they can then take the next four certificates (Design, Machine Learning Applications, Mobile Applications and Agile Software Delivery) in any preferred sequence.

These certificates will enable graduates to become well-rounded IT professionals. They can also complete their learning journey towards the NUS Graduate Diploma in Systems Analysis with a capstone project and a 5-month internship that will give them an edge in the industry.

Find out more at
www.iss.nus.edu.sg/stackable-programmes

“I was impressed by GDipSA’s course coverage – how real-world relevant they are and how the course material was continuously refreshed to keep it as up-to-date as possible.

Jane Lee
Associate Application Consultant
NTT Data

“The GDipSA course content included a wide variety of technologies, and the internship opportunity as part of this programme was great for gaining industry experience too.

Shona Woo
Manager
PwC Singapore

“The GDipSA programme provided me with a robust foundation in IT and a problem-solving mindset. My internship at the Land Transport Authority, where I worked on a project to migrate a monolithic system to a microservices architecture, enhanced my technical skills and practical understanding of IT solutions.

Tony Lim
DevOps Engineer
NCS Group

Other Graduate Programmes

Master of Technology in
Artificial Intelligence Systems

Available as
Stackable Graduate Certificate Programme in Artificial Intelligence

Master of Technology in
Software Engineering

Available as
Stackable Graduate Certificate Programme in Smart Systems & Platforms

Master of Technology in
Enterprise Business Analytics

Available as
Stackable Graduate Certificate Programme in Data Science

Master of Technology in
Digital Leadership

Available as
Professional Certificate Programme in Digital Leadership

About NUS-ISS

Established in 1981, NUS-ISS nurtures digital talent for the industry through graduate education, executive education programmes, consultancy, applied research, and career services. NUS-ISS guides individuals and organisations to bridge future opportunities through a unique portfolio of multiple learning pathways such as blended learning and stackable programmes, leading the way in shaping the next curve of digital excellence. It offers a wide spectrum of programmes in critical industry disciplines, such as digital leadership, software development, data science, artificial intelligence, cybersecurity, product management, smart health and digital innovation.

To date, over **200,000** digital leaders and professionals, **9,647** corporate client organisations, and **8,277** graduate programmes alumni have benefitted from NUS-ISS's suite of services. Its programmes are delivered by NUS-ISS staff with an average of more than 20 years of industry experience and supported by a strong network of partners. NUS-ISS also works with industry partners and associations locally and globally to co-create a digital learning ecosystem that inspires and shapes solutions for the digital economy.

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