Master of Technology in Intelligent Systems Capstone Project

Capstone Requirements (ISS 2025-2026)

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Objectives of IS Capstone Project

- To design and develop an **Intelligent System**
- To apply the knowledge and technical skills you have/will learn in the Master of Technology programme in a **practical/commercial situation**.
- To make use of at least one of the IS problem-solving techniques which you have/will learn in the programme.
- To produce good documentation and reports describing the various aspects of system development.
- To describe and discuss the progress made during the project in a series of presentations.
- To deliver value to the sponsor company

Capstone Project Structure & Activities

Phase 0 (3 months)	Phase 1 (3 months)	Phase 2 (4 months)
• Actively seek projects from your companies. • Discuss the feasibility with any IS lecturers • Prepare project proposal	• Domain familiarization • Knowledge/Data Acquisition • Project Planning • Problem Modeling • Exploratory Data Analysis • Initial Model/System Design • Prototype/PoC	• Development • Coding • Testing • Validation • Implementation • Demonstration

Project High-Level Schedule

	Hand-in Deliverables	Deadline
Phase 0 (Sep – Dec 2025)	1. Team Project Proposal for formal approval	30 Nov 2025
Phase 1 (Feb – April 2026)	First Report: 1.A detailed **Project Proposal** including a Section on progress and updates 2.Present to ISS Assessors	11 April* 16 April*, 6:30-10:00pm
Phase 2 (June – Sep 2026)	1.A well written **Technical Paper** (formatted as a publishable paper) 2.An **Individual Accomplishment Report** 3.Present to ISS Assessors	11 Oct* 15 Oct* 6:30-10:00pm

Finding Projects

- Employer organisations
  - Projects should ideally come from the team members
  - Team member can be the client representative or SME
- Student's pet project
  - Students are free to propose their own projects.
  - Develop an IS system or product for which you perceive there is a need. In this case, it is useful to find credible potential users of the product who are prepared to assist you in user requirements specification, testing and acceptance.
- ISS sponsored projects
  - Don't count on this because it is very limited and restricted

All project proposals must be **submitted for approval**.
Start discussing your preliminary ideas with any lecturer

Project Focus

- **Commercial oriented projects**: those that result in a working prototype or demonstration system (e.g. a diagnostic system, industrial automation robot & vision system, conversational robots, etc.)
- **R&D type projects**: those that perform an investigation or exploration (e.g. an investigation into the use of deep learning for predicting (say) tsunamis, or an investigation into the application of wearable IoT sensors to detect human movement disorders, etc.)

Types of Projects

Coursework	Potential Application Areas
Intelligent Reasoning Systems	**Build systems that problem solve across business & engineering domains** *e.g. IBM Watson, Geico instant online quotes*
Pattern Recognition Systems	**Build systems that recognise and take actions based on patterns found in data** *e.g. traffic data monitoring, smart appliances, surveillance data, social media*
Intelligent Software Agents	**Build software agents that act on behalf of humans in diverse transactions** *e.g. shopping bots, PDA's*
Intelligent Robotic Systems	**Build advanced robotics and automation systems** *e.g. cooperative robots, robot home helps, shopping assistants*
Intelligent Sensing Systems	**Build systems that make decisions based on visual, audio and speech inputs** *e.g. crowd monitoring, face recognition, medical sensing, vehicle control*
Practical Language Processing	**Build systems that understand and process natural language** *e.g. mine social media for sentiments, build intelligent chatbots*

IS01 Capstone Projects 2020

Company	Project Title
Schlumberger	Flow pattern detection in Multiphase Flow Meters: A Machine learning approach
Tectus Dreamlab	Collision Avoidance Module For Ground Robot …
Thales Solutions Asia	Smart Home Recognition Security Systems
Infineon	AI-driven Troubleshooting System for Contact-related Failures in Automatic Test Equipment
NCS	Intelligent Pedestrian Recognition System for Surveillance Video
Advance AI	Table Detection
Matthew-Uvic	Automated Lung Cancer Diagnosis Based on Machine Learning Algorithms
Matthew-Uvic	Lung Module Analysis System
Uvic	Organ nuclei segmentation and classification to study tumor microenvironment in lung cancer
ISS-FoE	Volume visualization to predict viewer's attention
Oracle	Security Access with Deep Learning
SMRT	Railway Track Defect Detection using Machine Learning
Student Proposed	Intellitrader (AI leveraged Trading system)
Quad Dimension Design	Smart Virtual Interactive Chatbot for both Commercial and Educational Purposes
Surbana Jurong	Image Classification and Captioning for Feedback Reporting System
Student Proposed	Contextual Background Music Generator
National Heritage Board	Windows to History

Project Teams

- You are expected to form your own project teams
- Each team is **collectively responsible** for successfully delivering a project
- Each team will be allocated an ISS Advisor

Responsibilities of Sponsors

- Provide **supervisors** who will be responsible for the project team
- **SME** who can articulate their knowledge to the students
- Make **available** all data that is required for the successfully completion of the project
- Workspace and other necessary resources (including hardware and software) for the students
- Access to information and personnel required to complete the project

Project Conduct issues

- Projects can either be conducted at ISS or at the client-site depending on:
  - client (data) constraints
  - availability of tools and software packages
- You may be asked to sign confidentiality/non-disclosure agreements by you client company
  - You and your team should comply accordingly
- Sponsor companies have the exclusive right to own the IP originating from the project
- ISS has no intention to own any IP
  - However, ISS requires to the right to discuss your project for academic and learning purposes only

Capstone Project Assessment

- You will be graded by various ISS staff to ensure fairness and objectivity.

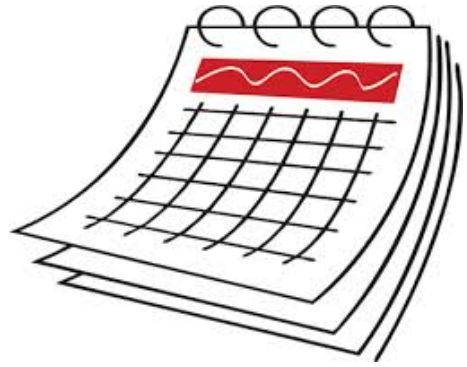
Assessment Components	Weightage
Phase 1	
Report	15%
Presentation	15%
Phase 2	
Technical Paper	20%
Presentation	20%
System Implementation & Demo	20%
Sponsor/Panel Assessment	10%
Individual Accomplishment	Used to adjust your individual scores

Assessment Format (guide only)

Deliverable	Assessment Guides
Presentation	• Introduction, Conclusion • Organisation, Sequence and flow • Relevance, Completeness • Visual Aids, Clarity of explanation • Personal style • Handling of Q&A
Technical Paper and Reports	• Well written documentation of work • Flow/Grammar, Clarity • Substantial depth, Technical achievement • Appropriate References
Final System: Of type **Application**	• Complexity of problem • Innovativeness • Verification & Validation • Customer satisfaction/ Feedback • Overall functionality
Of type **Research**	• Complexity of problem • Novelty • Literature Review • Application of Methodology • Programmiing

Proposal Submission Schedule

Date	Activity
Start Now!	Begin seeking projects Discuss with lecturers for in-principle approval
30 Nov 2025	Submit Draft proposal to ISS
Mid of Dec	ISS confirms all projects Project formally begins



Questions and Answers