



NUS
National University
of Singapore

新加坡国立大学苏州研究院
NUS (Suzhou) Research Institute

本硕联合培养项目

工业系统工程与管理专业

陈楠

副系主任（研究生）

isecn@nus.edu.sg



3+1+1 → 3+1+X

3年

母校就读本科前三年

1年

就读311项目
衔接课程

1年

新国大硕士
学习

1. 自主规划课程进度，
按需毕业（1-2年）
2. 参与研究项目，为博
士深造准备
3. 积极实习，奠定工作
基础

1-2年



新加坡国立大学苏州研究院
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学习在新国大苏研院



本硕联合培养项目 衔接课程设置

1	英语学术写作与交流	<ul style="list-style-type: none">□ 英语学术论文写作与交流□ 实现英文思维的转变□ 快速适应全英文教学
2	科学&技术系列研讨会	<ul style="list-style-type: none">□ 海内外学术界以及产业界知名企业家和学者□ 分享国际前沿科研技术、产业应用、创业经验和各行业知识，开阔视野
3	专业课程	<ul style="list-style-type: none">□ 新国大 ISEM 授课□ 部分课程可以转换为硕士阶段学分
4	两学期的毕业设计 ("3+1+1"项目)	由新国大专业讲师提出实施



ISEM选修课程介绍 衔接课程设置

工业系统工程与管理相关课程@新国大苏研院	新国大工业系统工程与管理本科相关课程
制造物流 (Manufacturing Logistics)	IE3120
质量工程II (Quality Engineering II)	IE4230
建模和分析 (Modeling and Analytics)	IE4211
成本分析与管理 (Cost Analysis and Management)	IE4242
供应链系统模型 (Supply Chain Modeling)	IE4220, IE5105
应用预测 (Applied Forecasting Methods)	IE5202
决策分析 (Decision Analysis)	IE4243, IE5203
系统建模与高级仿真 (System Modeling and Simulation)	IE5504
新产品管理 (New Product Management)	IE5211
创新与技术管理 (Management of Technological Innovation)	MT4002, MT5007



ISEM毕业设计要求

1. 工业工程系老师提供项目选择，题目涵盖大数据分析，物流管理，运筹学，仿真，能源经济等
2. 课题可分为理论探索，应用实践，或行业研究
3. 学生完成**30-50**页的论文(英文)，中期答辩(约**30**分钟，包括个人介绍和问答环节)，最终答辩(约**45**分钟，包括个人介绍和问答环节)，和一个墙报展览。
4. 毕业论文答辩在苏研院进行(英文)。但学生母校可能会对毕业论文有额外的要求(包括论文写作语言和答辩等)。在苏研院结业典礼上还有一次墙报(posters)展览
5. 学生可自行提出满足要求的毕业设计课题



ISEM毕业设计选题

Selected FYP Project Title
Artificial Intelligence (AI) at National University Hospital System
Investigating the Optimisation Problem for Facility Location
A Study on Electricity Vehicle Routing Problem in the Port
Practical Algorithms for Multi-Objective Reinforcement Learning
Stock Return Prediction Using Random Forest Algorithm
Demand Forecasting Algorithms
Feasibility of Flexible Hotel Check-In and Check-Out Timings on Increasing Customer Satisfaction and Profit
Analysis of Carbon Intensity Indicators
Unmanned Aerial Vehicles (UAVs) Routing Problem
Developing a Commercial Matching and Recommendation System for Live Streaming Shopping Platform Using the Multiple Criteria Decision Making Approach



新加坡国立大学苏州研究院
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新国大ISEM系介绍



Industrial & Systems Engineering (ISE)

Engineers make things,
Industrial Engineers make things better!





What do we do?



Manufacturing

Optimal production schedule that maximizes output by minimizing waste while meeting delivery datelines.



Logistics

Optimal delivery routing plan that minimizes the number of trucks required.



Other Large Organizations

E.g. banks, hospitals. Business process reengineering to reduce waste and increase productivity.



Problem modelling

Evaluate different solutions

Find optimal solution



Example: Surge Pricing



Intuitively, we all know that prices should increase when demand increases.
The question is “How Much?”



Have you wondered how ride-hailing companies implement surge pricing?

Grab

Price Demand Model

Evaluate profits under
different prices

Select the optimal price

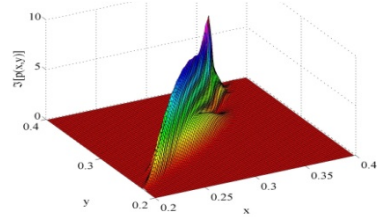


Example: Next Generation Port

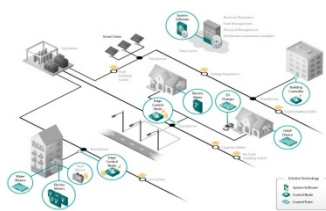




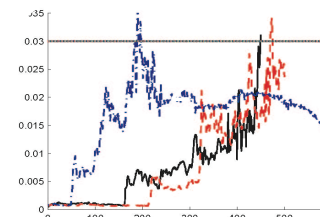
Example: Integrated System Reliability



Design Evaluation



System Reliability
Modeling



Condition Monitoring

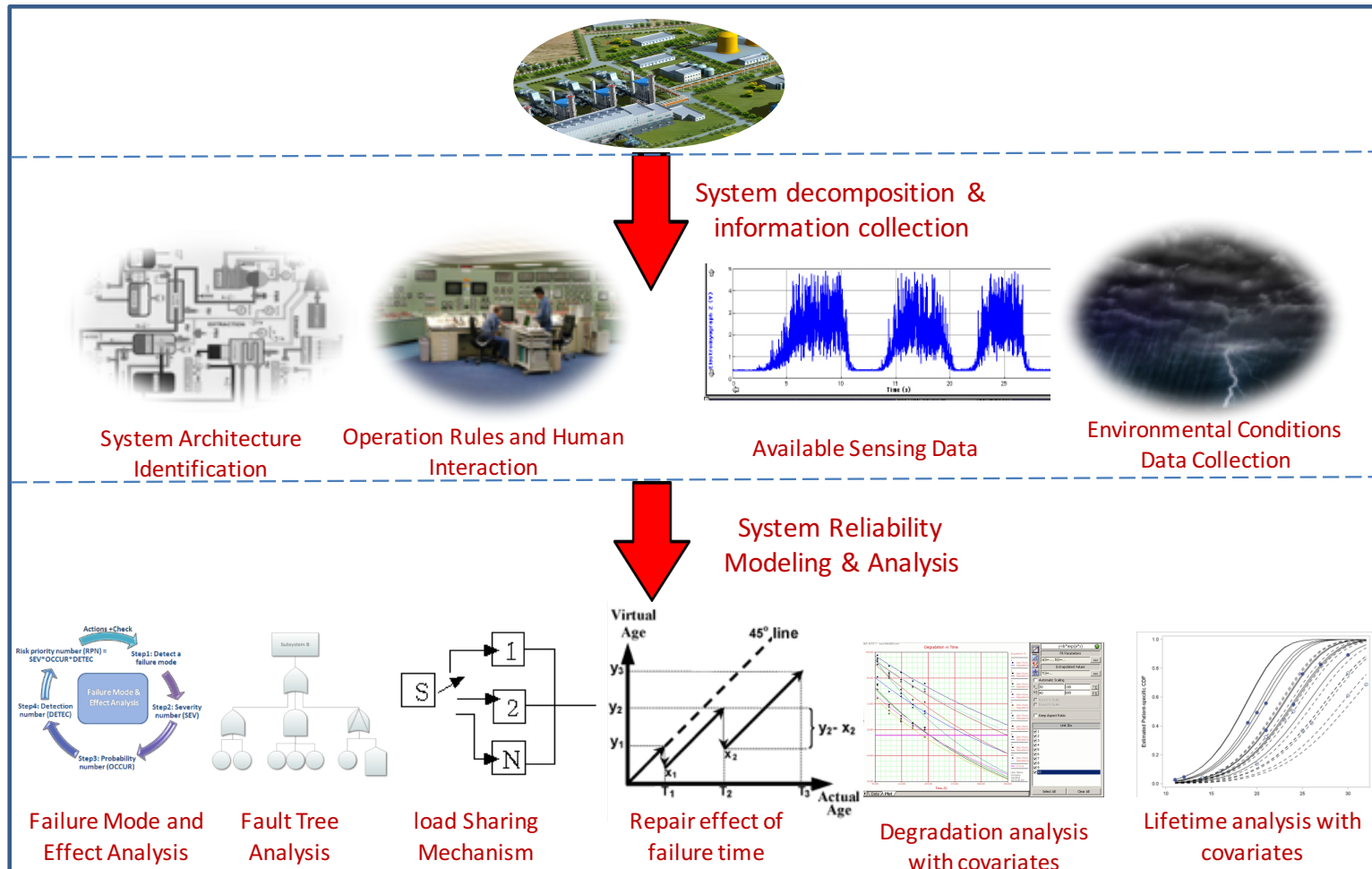


Performance based
Maintenance

System modeling, Risk analysis and evaluation, High performance computing, Simulation modeling/analysis, Stochastic optimization

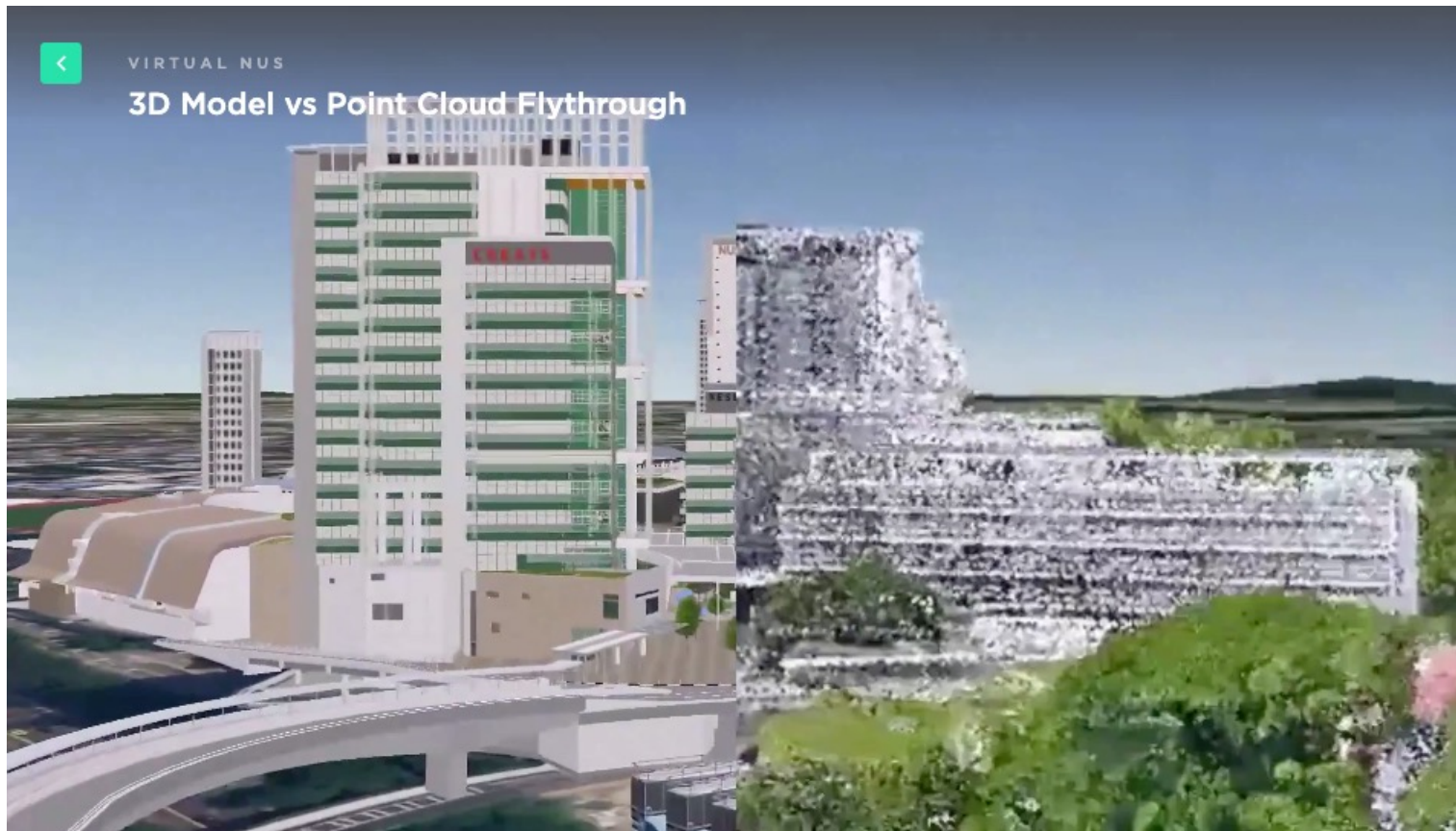


Example: Integrated System Reliability





Example: Virtual NUS





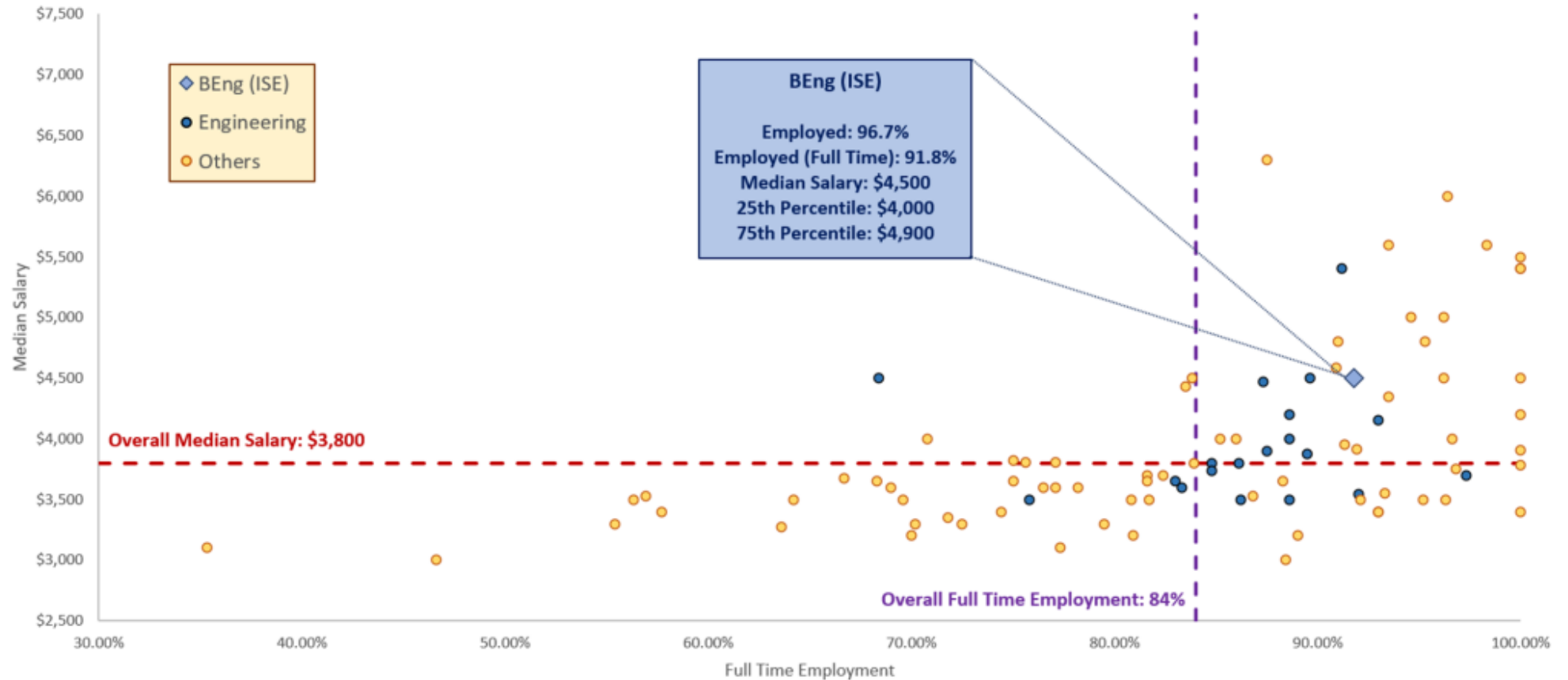
ISEM@NUS

- **Full Time Faculty**
 - 5 Professors, 13 Associate Professors, 5 Assistant Professors, 4 Senior Lecturers/Research Fellows
- **Academic Degree Programs**
 - Bachelor of Engineering (ISE)
 - Bachelor of Technology (IME, SCM)
 - Master of Science (ISE, MOTI, SCM, MTM)
 - Doctor of Philosophy



Career Prospects of ISEM

Graduate Employment Survey 2021 (NUS + NTU + SMU + SUSS)

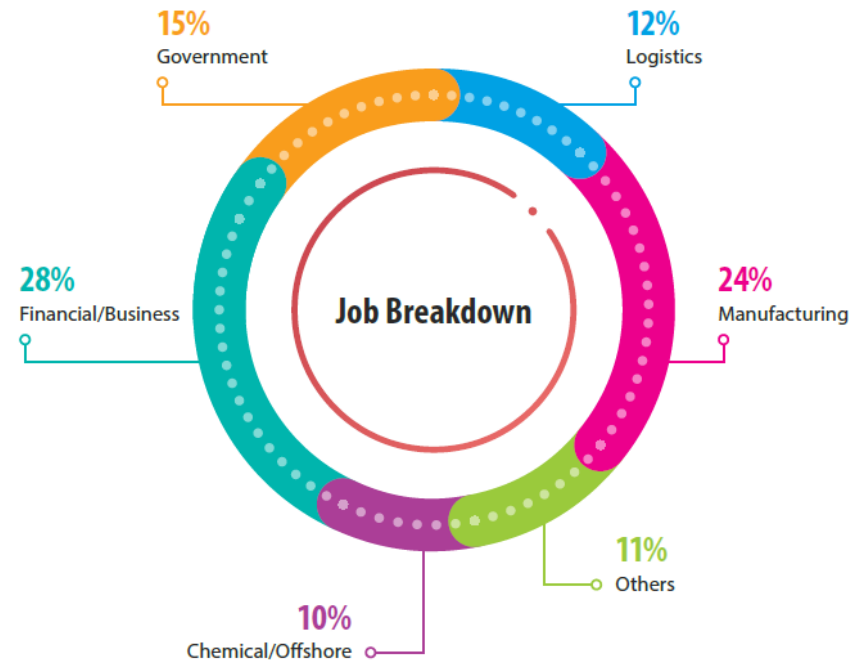




Our Graduates



Our graduates find employment across a wide range of industries





Career after Graduation



SINGAPORE





Sample Jobs

NAME OF COMPANY	DESIGNATION	INDUSTRY
NSAF	AERODYNAMICS BRANCH HEAD	AEROSPACE
ROVISYS ASIA	SYSTEMS ENGINEER	ARCHITECTURAL, ENGINEERING & TECHNICAL SERVICES
ST ENGINEERING LAND SYSTEMS	SENIOR ENGINEER	ARCHITECTURAL, ENGINEERING & TECHNICAL SERVICES
KURIHARA KOGYO CO., LTD	SENIOR ENGINEER	BUILDING, CONSTRUCTION, HOUSING & REAL ESTATE
NTU	SENIOR TECHNICAL EXECUTIVE	EDUCATION
NATIONAL UNIVERSITY OF SINGAPORE	RESEARCH ENGINEER	EDUCATION
AMS SENSORS ASIA PTE. LTD	ENGINEER	ELECTRONICS
MICRON SEMICONDUCTOR ASIA PTE LTD	SENIOR ENGINEER	ELECTRONICS
INFINEON TECHNOLOGY	INTERN	ELECTRONICS
MICRON	QUALITY SYSTEM SENIOR ENGINEER	ELECTRONICS
DSTA	SENIOR ENGINEER	GOVERNMENT
MEAD JOHNSON	R&D PROCESS ENGINEER	HEALTHCARE
HP INC.	PRODUCT ENGINEER	INFORMATION TECHNOLOGY AND TELECOMMUNICATIONS
AUTODESK ASIA PTE. LTD	TECHNICAL SUPPORT SPECIALIST (AEC)	INFORMATION TECHNOLOGY AND TELECOMMUNICATIONS
ZLA	FOUNDER, CEO	INFORMATION TECHNOLOGY AND TELECOMMUNICATIONS
TELENOR GROUP	SOURCING OPERATIONS INTERN	INFORMATION TECHNOLOGY AND TELECOMMUNICATIONS
REC SOLAR PTE LTD	ENGINEER	MANUFACTURING
MICRON SEMICONDUCTOR ASIA	MANUFACTURING ENGINEER	MANUFACTURING
LEAR CORPORATION	SENIOR ADVANCED BUYER	MANUFACTURING
PANASONIC INDUSTRIAL DEVICES	ASSISTANT MANAGER	MANUFACTURING
GLOBALFOUNDRIES	INTERN	MANUFACTURING
UMC	ENGINEER	MANUFACTURING
MAKINO ASIA PTE LTD	ENGINEER	MANUFACTURING
MAKINO ASIA PTE LTD	DESIGN & DEVELOPMENT ENGINEER	MANUFACTURING
MICRON SEMICONDUCTOR ASIA PTE LTD	SENIOR ENGINEER	MANUFACTURING
MICRON	ENGINEER	MANUFACTURING
INFINEON TECHNOLOGY ASIA PACIFIC	NEW PRODUCT INTEGRATION	MANUFACTURING
MICRON SEMICONDUCTOR ASIA PTE LTD	PLANNING ENGINEER	MANUFACTURING
ST AEROSPACE SERVICE CO PTE. LTD.	ENGINEER	MANUFACTURING
ADVANCED MICRO FOUNDRY	PROCESS ENGINEER	MANUFACTURING
SAMSUNG ENGINEERING	ENGINEER	OIL AND GAS
CAMERON	MANAGEMENT TRAINEE	OIL AND GAS
AIR LIQUIDE	ASSISTANT PROJECT ENGINEER (INTERN)	OIL AND GAS
KEPPEL FELS	SENIOR COMMERCIAL EXECUTIVE	OIL AND GAS
NOVARTIS PHARMACEUTICAL	PROJECT & PROCESS ENGINEERING INTERN	PHARMACEUTICALS
NOVARTIS	INTERN	PHARMACEUTICALS
GSK BIOLOGICALS	QA EXECUTIVE	PHARMACEUTICALS
DENSO WAVE SINGAPORE	CAD ENGINEER	RESEARCH AND DEVELOPMENT
SIMTECH	RESEARCH ENGINEER	RESEARCH AND DEVELOPMENT
NUS CENTRE FORADVANCED 2D MATERIALS	SCIENTIFIC OFFICER	RESEARCH AND DEVELOPMENT
SAP ASIA	MACHINE LEARNING BUSINESS DEVELOPMENT INTERNSHIP	RESEARCH AND DEVELOPMENT
PARIS GALLERY LLC	CORPORATE FINANCE MANAGER	RETAIL SERVICES
VITALITEA LLP	MANAGING PARTNER	RETAIL SERVICES



Other Job Options

- Business & Customer Analyst, Business & Integration Arch Analyst, Business Analyst, Business Development
- Supply Chain Analyst, Procurement, Planning, Industrial Engineers, Logistics Analyst,
- Consultant, Management Trainee
- Data Analyst, Data Scientist
- Product Manager, Project Manager
- Technical Sales Manager, Solution Architect
- ...



Master of Science Programs



Masters of Science (Industrial and Systems Engineering) Programme



Masters of Science (Management of Technology) Programme



MSc (Industrial and System Engr)

- Started in 1981, about 170 students every year
- 10 courses with GPA 3.0/5 to graduate
- Five specializations to cater for personal interests and development
 - Data Analytics
 - Engineering and Service Management
 - Operations Research
 - Systems Engineering
 - Decarbonization Analytics



MSc (ISE): Curriculum

Data Analytics

- 1) IE5002 Applied Engineering Statistics (compulsory)
- 2) IE5005 Data Analytics For Industrial Engineering (compulsory)
- 3) IE5202 Applied Forecasting Methods
- 4) IE5231 Statistical Methods for Process Design and Control
- 5) IE5600 Applied Programming for Industrial Systems
- 6) IE5602 Statistical Learning in Engineering I

Engineering and Service Management

- 1) IE5003 Cost Analysis And Engineering Economy (compulsory)
- 2) IE5006 Large Scale Systems Engineering
- 3) IE5121 Quality Planning and Management
- 4) IE5208 Systems Approach to Project Management
- 5) IE5213 Service Innovation and Management
- 6) MT5006 Value Creation Through Product Development
- 7) MT5024 Maximising Innovation Value through Patent Analytics

Systems Engineering

- 1) IE5006 Large Scale Systems Engineering (compulsory)
- 2) IE5123 Reliability Engineering and Asset Management
- 3) IE5205 Healthcare System and Analytics
- 4) IE5206 Energy and Sustainability
- 5) IE5221 Transportation Modeling and Economics
- 6) IE5504 Systems Modelling and Advanced Simulation

Operations Research

- 1) IE5001 Operations Research for Decision Making (compulsory)
- 2) IE5004 Stochastic Models and Their Applications (compulsory)
- 3) IE5005 Data Analytics For Industrial Engineering
- 4) IE5105 Modelling for Supply Chain Systems
- 5) IE5203 Decision Analysis
- 6) IE5205 Healthcare System and Analytics
- 7) IE5504 Systems Modelling and Advanced Simulation
- 8) IE5604 Optimisation Modelling and Applications



MSc (Mgmt of Technology & Innovation)

- Started in 2005, about 70 students every year
- 10 courses with GPA 3.0 to graduate
- Four specializations to cater for personal interests and development
 - Innovation & Entrepreneurship
 - Data Analytics for Innovation Management
 - Product Management and Digital Strategy
 - Intellectual Property Management



MSc (Mgmt of Technology & Innovation)

Product Management and Digital Strategy (new)

- 1) MT5006 Value Creation Through Product Development
- 2) MT5020 Managing the Human Elements of Technology Management
- 3) MT5021 Creativity and Problem-Solving Skills
- 4) MT5022 Digital Disruption and Technology Strategy
- 5) IE5213 Service Innovation and Management

Intellectual Property Management (new) *to be offered in AY2023/2024

- 1) MT5001 Intellectual Property Management & Innovation Strategy (compulsory)
- 2) MT5005 IP Law for Engineers and Scientists
- 3) MT5010 Technology Forecasting, Intelligence & Foresighting
- 4) MT5015 The Financial and Business Aspects of Intellectual Property (IP)
- 5) MT5024 Maximising Innovation Value through Patent Analytics

Innovation & Entrepreneurship

- 1) MT5008 Internal and Collaborative Corporate Entrepreneurship
- 2) MT5023 Technology-Based Entrepreneurial Strategy
- 3) MT5911 Venture Capital Funding for TechVenture
- 4) MT5912 Frugal Innovation
- 5) MT5913 Techlaunch – Experiential Entrepreneurship
- 6) MT5920 Enterprise Development

Data Analytics for Innovation Management (new)

- 1) IE5005 Data Analytics For Industrial Engineering (compulsory)
- 2) MT5010 Technology Forecasting, Intelligence & Foresighting
- 3) MT5024 Maximising Innovation Value through Patent Analytics
- 4) IE5002 Applied Engineering Statistics
- 5) IE5203 Decision Analysis



Tuition Fees and Living Expense

- **MSc program fee at NUS ISEM (AY2022-2023)**
 - S\$53,697.50 per program
 - S\$77.57 per semester
- **Living Expense**
 - Rental: S\$1500 per month
 - Food: S\$400 per month
 - Transportation: S\$100 per month
- **Reference: median salary S\$3500 per month in the age group 25-29.**



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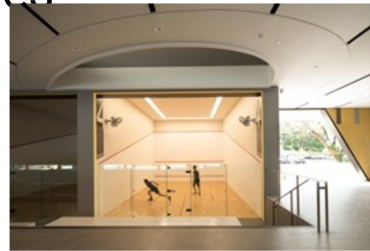
生活在新国大



NUS Campus Life

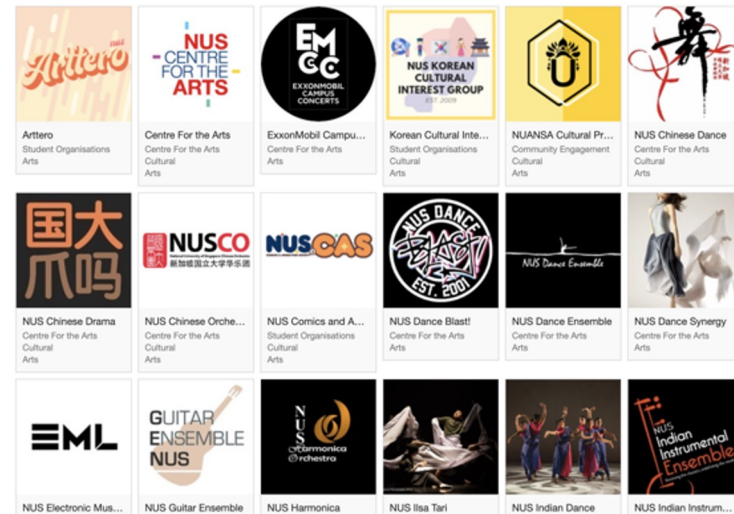
Facilities

- Many gyms, courts, pools, and dance studios
- Fight libraries



Clubs & Events

- Many student clubs to join
- Various campus events





Living in Singapore





Experiencing Singapore

Multicultural and Multilingual



Affordable Living

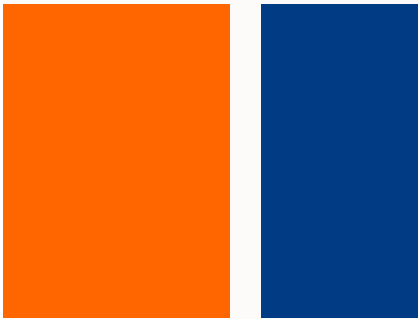


本硕联合培养项目 申请流程

- 报名时学生要提交以下扫描文件:
 1. 苏研院3+1+1项目申请表,
 2. 苏研院信息登记表,
 3. 大学成绩单(加盖教务处公章或由学校负责老师直接提交给苏研院),
 4. 英文成绩单(包括英语四、六级, TOEFL 或 IELTS 成绩单),
 5. 获奖证书和其他有关证明材料,
 6. 身份证扫描件(正反面)
- 报名材料统一提交给合作院校学院的负责老师, 由院负责老师汇总并提交给 苏研院的相关负责老师。
- 由新国大工业工程老师和苏研院老师共同确定面试名单并进行英文面试 (或网上视频面试), 按学术成绩, 英文成绩, 和面试结果择优录取。
- 如果在报名时还没有合格的英文成绩, 但已准备在七月底之前考IELTS 或 TOEFL, 可以先报名。等英语成绩出来后再补交, 我们会先根据申请人的英语六级成绩考虑是否进行面试。



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Thank You
For Your Attention