SMU Press Release

SMU launches Digital Business major to fuel industry with talent equipped to support business digital transformation across industries

The University's Lee Kong Chian School of Business and School of Computing & Information Systems join hands to offer new major from August 2021

Singapore – 10 March 2021 (Wednesday) - Companies are increasingly adopting innovative ways of doing business based on advances in digital technology. This integration of digital technology to fundamentally change how businesses deliver value has led to a wave of businesses embarking on what has been referred to as *digital business transformation.*

In Singapore, guiding companies across sectors to adopt digital technology is one of the key drivers of digital transformation as identified by the Government. Equipping the workforce with the necessary knowledge and skills would be critical step towards achieving this. Most recently, on 2 March 2021, the Government also announced a new initiative called the Digital Leaders Programme to be launched next month to help promising local companies to speed up their efforts to transform digitally.

It is therefore timely that Singapore Management University (SMU) will, from Academic Year (AY) 2021-2022 (which begins in August 2021), offer a **new second major in Digital Business**, to train a pipeline of talent with the necessary knowledge and skills to support the country's business digital transformation demands across industries. This is the first such undergraduate major in Singapore.

The second major will be jointly offered by Lee Kong Chian School of Business (LKCSB) and School of Computing & Information Systems (SCIS). The collaboration leverages SCIS' strength in delivering more technical courses and LKCSB's forte and focus on the application of digital technologies to business. Both Schools will also jointly curate courses relevant to digital business.

This much anticipated second major aims to produce graduates who are able to apply basic programming skills, and have a good understanding of the different digital technologies in use, such as artificial intelligence, cloud computing, analytics, mobile networks, social media, and the Internet of Things. At the same time, the graduates will know how to apply these digital technologies to various business functions in order to create value.

Professor Venky Shankararaman, SMU's Vice Provost (Undergraduate Matters), said, "In an increasingly complex world, a multi-disciplinary education is immensely valuable. The Digital Business second major offers a rare opportunity for students with an aptitude in business *and* technology to be trained and well-prepared for a fast-changing world."

"As the industry moves along the broader plan promulgated by the government, we are starting to see strong marketplace demand for graduates familiar with a grounding in the business disciplines, an affinity for technology, some coding and software development skills, and data analytic skills. We are confident that the ability to use and apply digital technologies in the business context is going to be an advantage that can give our graduates an edge when seeking employment," he added.

Students from AY2019-2020 intake onwards will be eligible for this second major. The major, which is offered to students from all SMU Schools, will be launched in August 2021, at which point students from AY2019-2020 intake will be entering the third year of their programme. We expect approximately 40 students to declare the new second major in its first year of launch.

- End -

Enclosures

- Annex 1: About the Digital Business second major – Curriculum
- Annex 2: Digital Business second major - Course Descriptions

---

For media queries, please contact:

Huang Peiling (Ms)
Senior Assistant Director, Corporate Communications
Office of Corporate Communications & Marketing, SMU
Tel: 6828-0964 / Hp 9845-3361
Email: plhuang@smu.edu.sg

Teo Chang Ching (Mr)
Senior Assistant Director, Corporate Communications
Office of Corporate Communications & Marketing, SMU
DID: 6828-0451 / Hp 9431-8353
Email: ccteo@smu.edu.sg

About SMU

Established in 2000, Singapore Management University (SMU) is recognised for its disciplinary and multi-disciplinary research that address issues of global relevance, impacting business, government and society. Its distinctive education, incorporating innovative experiential learning, aims to nurture global citizens, entrepreneurs and change agents. With more than 11,000 students, SMU offers bachelors, masters and PhD degree programmes in Accountancy, Business, Economics, Computing, Law and Social Sciences, and executive development and continuing education programmes. Through its city campus, SMU focuses on making meaningful impact on Singapore and beyond through its partnerships with industry, policy makers and academic institutions. www.smu.edu.sg

About SMU Lee Kong Chian School of Business (LKCSB)

SMU commenced its curriculum in 2000 with the School of Business, which welcomed its pioneer cohort of students in August 2000. In 2004, the Lee Foundation contributed S$50 million to SMU in honour of the late Dr Lee Kong Chian, a well-known Southeast Asian businessman, philanthropist and community leader. In recognition of the Lee Foundation's generosity, SMU named in perpetuity the School of Business, the building and the university-wide scholars programme after Dr Lee Kong Chian.

Today, LKCSB is a dynamic Asian business school with more than 4,000 students and over a hundred full-time faculty members with doctorate degrees from renowned universities such as Cornell, Harvard, INSEAD, London Business School, Wharton, Oxford, Stanford and Yale. The school offers undergraduate, master's and doctoral programmes and is affiliated with a number of research centres such as the Sim Kee Boon Institute for Financial Economics, the Centre for Marketing Excellence and the Institute for Innovation and Entrepreneurship. www.business.smu.edu.sg

About SCIS

School of Computing and Information Systems (SCIS) is recognised internationally for its innovative research and education focused on computing technology as well as practical solution development. Real-world industry sectors provide our SCIS with a testbed and laboratory for experimentation, as well as a fertile breeding ground for new ideas. Our faculty and students apply their research results to solve real problems in a variety of industry settings and to create IT applications and systems. At the same time, our faculty actively publish in top-quality Computer Science and Management Science conferences and journals. Our research areas include Cybersecurity; Data Management & Analytics; Human-Computer Interaction; Information Systems Management; Intelligent Systems & Optimisation; Machine Learning & Intelligence; Multimedia; Pervasive Sensing & Systems; Software Engineering & Systems.

SCIS offers a suite of degree programmes. Our BSc (Information Systems), BSc (Computer Science) and BSc (Computing & Law) have been remarkably successful in demonstrating educational innovations and creating a culture of learning, establishing external linkages and partnerships with industry, government and the social sector, and with job placement. We run a highly ranked Master of IT in Business degree, with specializations in Analytics; Artificial Intelligence; Digital Transformation; and Financial Technology & Analytics. Our doctoral degrees, including PhD (Computer Science), PhD (Information Systems) and Doctor of Engineering, have produced graduates who joined highly sought organisations in academia and industry. scis.smu.edu.sg

Annex 1
About the Digital Business second major curriculum

Curriculum

The new DB major will be offered as a second major. The number of CUs required for the major will be 8, as with any second major offered at the university. However, BBM students will only need 6 CUs, because of opportunities for double-counting of courses that will be required for their first major. SCIS students will only need 3-5 CUs because of double-counting with first major courses.

Major compulsory courses (3 CUs)

- Managing Strategic Change and Digital Transformation (MGMT236) **NEW*
- Introduction to Programming (IS111) / Programming Fundamentals I (CS101)
- Digital Business: Technology & Transformation (IS215)

Major electives (3 CUs)

Choose two from the following basket:

- Doing Business with AI (MGMT240)
- Financial Innovation (FNCE313)
- Digital Marketing (MKTG220)
- Interaction Design Communication (COMM255) **NEW*
- Online Business and Marketplaces (OPIMXXX) **NEW*

Choose one from the following basket:

- Business Process Analysis and Solutioning (IS210)
- Interaction Design and Prototyping (IS211)
- Sustainable Digital Cities (SMT112)
- Digital Transformation Strategy (IS425)
- Analytics Foundation (IS217) – *pre-req of IS111 and co-req of COR-STAT1202*

General business courses (2 CUs)

Choose two from among the following basket of seven courses. (BBM students would have completed these courses as part of their first major.)

- Finance (FNCE101)
- Marketing (MKTG101)
- Management of People at Work (OBHR101)
- Operations Management (OPIM201)
- Strategy (MGMT102)
- Management Communication (COMM101)
- Financial Accounting (ACCT101)

Descriptions of the above courses can be found in the Annex 2.

****

Annex 2
Digital Business Second Major – Course Descriptions

SCIS courses
1. Introduction to Programming (IS111)
2. Business Process Analysis and Solutioning (IS210)
3. Interaction Design and Prototyping (IS211)
4. Analytics Foundation (IS217)
5. Digital Transformation Strategy (IS425)
6. Digital Business Transformation (IS441)
7. Sustainable Digital Cities (SMT112)

LKCSB courses
8. Doing Business with AI (MGMT240)
9. Financial Innovation (FNCE313)
10. Digital Marketing (MKTG220)
11. Interaction Design Communication (COMM255) **NEW*
12. Online Business and Marketplaces (OPIMXXX) **NEW*
13. Managing Strategic Change and Digital Transformation (MGMT236) **NEW*

---

1. Introduction to Programming (IS111)

In this course students acquire foundational computer programming concepts and skills through Python, a widely-used programming language. Upon successful completion of this course, the students will understand and be able to appropriately apply fundamental programming concepts including variables, functions, parameters, loops and conditions as well as basic data structures including arrays (lists in Python) and hash tables (dictionaries in Python) in simple applications.

2. Business Process Analysis and Solutioning (IS210)

In any organisation, a business process is a key asset which is a collection of related, structured activities or tasks that produce a specific service or product (serve a particular goal) for a particular customer or customers. The business objective of an organisation is often to increase process speed or reduce cycle time; to increase quality; or to reduce costs, such as labour, materials, scrap, or capital costs. In other words, a management decision to invest in business process modeling is often motivated by the need to improve the efficiency and effectiveness of the processes that exist within and across organisations. Business Process Analysis and Solutioning course presents the concepts and methodologies required to execute a methodical approach to translate business process change requirements into clear IT solutions. The course will cover business process modelling and analysis. The goal is to identify the gaps in the business workflow and recommend the solutions based on technology solutioning or restructuring the workflows for process optimisation. The course will ensure that the students can smoothly translate enterprise business objectives into an effective IT solution architecture. Business process innovation has become a growing interest of several sectors due to the exponential growth of new technologies such as social media, big data, analytics, machine learning, IoTs and artificial intelligence. The students will be exposed to the various technologies and there role in process innovation. They will be able to analyse and review the innovated the business processes by studying some industry cases of digital transformation.

3. Interaction Design and Prototyping (IS211)

Information systems are by necessity highly structured and predictable. Human life, on the other hand, is messy and unpredictable. When we try to fit human life into the structures expected by information systems, problems are inevitable. Interaction Design is a collection of tools for tackling these problems. When applied well, these tools can help students build information systems that are useful, usable, and a pleasure to use. Interaction design is an iterative process. Each iteration has three stages:

- Observation: We watch what users do to determine their needs. Watching is essential, because users often do not know or cannot express what they need.
- Prototyping: We collect our design ideas into representations that users can interact with. Prototypes vary from very rough (low-fidelity) to more polished (high-fidelity).
- Evaluation: We learn how well our design is meeting users' needs. There are many evaluation strategies that vary by accuracy and cost of execution.

Because this is an iterative process, we do not seek perfect solutions.Instead, we focus early iterations on the most important problems, building inexpensive prototypes, and conducting fast evaluations. In later iterations, we use methods that take more effort to apply, but give more robust results.

4. Analytics Foundation (IS217)

The term "Analytics" has been around in the business settings for a while now, where past results have been used to guide and improve future performance of business. More recently, enhancements in technology have enabled the business world to produce and store very large amounts of data which needs to be processed, managed and analysed in order to uncover its hidden value. There is a real dearth of analytical talent needed to perform this task. This course aims to introduce students to the fundamental skills needed to get started with analytics.

This course will help them build a foundation needed for advanced analytics by introducing them to data exploration techniques, data preparation methodologies, applying key analytics technique and use them in formulating a business problem and identifying the correct analytical approach to solve it.

5. Digital Transformation Strategy (IS425)

This course addresses the business aspect of IT and students will learn how to apply IT to gain business value. We shall discuss key IT management issues faced by CIOs and Business leaders and how to become effective change agents–managing changes in the organisation, processes and people. We shall also cover aspects of IS management & best practices, and apply them to solve real life case problems, as well as to propose IT strategy to address the specific business challenge given by a sponsoring organisation.

Topics will vary from year to year, enabling the instructor to include a combination of the latest IT trends (e g. Mobile & Social Media) and emerging issues at the intersection of IT and management, along with some of the important fundamentals.

Students will have the opportunity to learn from leaders (CxO) in the industry on their views on specific IT management issues, best practices, and how to be successful in their career (not limited to IT career).

6. Digital Business Transformation (IS441)

This course introduces students to the fundamentals of digital business, technologies and the principles and practices that lead to successful digital transformation. We explore the business process modelling and analysis. With the exploitation of digital technologies such as artificial intelligence, cloud, analytics, mobile networks, social media, and the Internet of Things, organisations can develop a competitive edge that can boost efficiency and drive innovative business models/processes that lead to an increase in the top and bottom lines. The course focuses on digital strategies using four components namely reimagining the business, re-evaluating value chain, reconnecting with customers and rebuilding the organisation. Challenges such as data security and governance, regulatory constraints, and future directions of digital business will be discussed. Besides helping students to understand the key concepts, tools and API services are introduced to implement the digital and analytics solutions.

7. Sustainable Digital Cities (SMT112)

The 21st century has been described as the urban century in view of rapid urbanisation rates that have led to the growth of megacities with a population of over ten million people. Many of these large cities are located in the developing world often with an inverse relationship between economic growth and urbanisation despite the potential of cities as engines of growth and development. All big cities in both the North and South as well as emerging economies such as New York, London, Tokyo, Paris, Shanghai, Hong

Kong, Singapore, New Dehli, Jakarta etc. have to cope with huge urban challenges in areas such as climate change, high population density, energy, poverty, health, access to basic utilities, pollution (air & ground), housing and transport.

How do we create sustainable cities which are spacious, green, connected, fair and safe? How can the concept of urban sustainability be deployed to engender 'good' cities which are inclusive, accessible and effectively governed? How can the economic potential and performance of 'global cities' be enhanced to create local economic development in support of the 2030 Agenda on Sustainable Development (especially SDG 11 - making cities inclusive, safe, resilient and sustainable)? How can urban planning, the appropriate design of the physical environment and novel technical 'smart city' solutions (e.g. electronic data collection sensors which supply information that can be used to better manage urban flows and allow for real-time responses) be utilised to tackle urban challenges? What does it take to create real urban communities where people can 'live, play and work' well? Is a 'digital city' automatically a 'smart' city? Is a smart city also sustainable? What does "sustainable" really mean?

This course will provide answers to these questions with special emphasis on the managerial aspects of urban sustainability and related 'smart' city applications. Starting from the stakeholder requirements of people, citizens, city managers and planners of sustainable and innovative cities, the course will enable students to explain what a sustainable city is and how to bring about sustainable urban development in a 'smart' (digital) city context.

With the help of case studies and resource persons such as industry leaders, planners and innovative city designers, technology experts and business development experts from local and international organisations, students will be familiarised with the opportunities and challenges of creating sustainable digital cities vis-à-vis the smart city thrusts of the Singapore Government and related businesses. Local site visits of 'smart' urban sites in Singapore will complement the learning experience.

8. Doing Business with AI (MGMT240)

More and more business organisations are using A.I. technologies such as predictive analytics, deep learning or sentiment / image analysis to identify patterns and trends in vast reams of (big) data, allowing them to make 'smarter' decisions (e.g. about loss of customers or the necessary service inspection of equipment) and potentially to become more competitive in real-time. As A.I. technology is already surpassing human decision- making in certain instances, there is growing concern about 'uncontrolled A.I.' in business and society, incl. regulatory and ethical-legal challenges. Against this background, this new course aims to equip students with foundational, theoretical and practical knowledge about A.I. driven business applications in selected private and public sector organisations. At the beginning of the course, students will watch Ex-Machina (2015), a psycho- techno thriller film which tells the story of a young programmer invited to the home of a reclusive billionaire to test whether an A.I. can pass itself off as human to assess the difficulties to successfully control and 'switch- off' artificial intelligence once created. Besides reconstructing the history of artificial intelligence from the 1960s to the current era (as well as a refresher about the basics of computer science algorithms such as audio and video compression algorithms), we will put emphasis on explaining the A.I. driven business models of several top international and local organisations such as New Relic, Splunk, Trade Desk, Nvidia, MetaMind, DBS, NTUC, Gov Tech Agency of Singapore and the German Research Center for A.I. In order to appreciate the power of A.I. technology, we will take a closer look 'under the A.I. hood' to understand what makes machine learning, deep learning, neural networks and image analysis tick. Visits to A.I. powered business organisations engaged in customer service management, finance, marketing, supply chain management or manufacturing will be organised aimed at appreciating both the benefits and downside of A.I. Students graduating from this course will be equipped with critical competencies to solve real-world business problems using A.I. technology while simultaneously casting a critical eye on the morality and ethics of commercialising A.I.

9. Financial Innovation (FNCE 313)

This course introduces current disruptive innovations in financial markets to prepare students for the evolving financial industry of the future. The course will cover main areas in financial innovation such as Financial Advisory, Investments, Transaction Services, Banking, and Inclusion.

The goal is mainly twofold. First, the course will shed light on the current industry demand for young talent and serve as a guideline for basic knowledge and skills relevant to the new business models. The second goal is to promote the methodology of continuous learning, adaptation, and inter-temporal planning so that students can be better prepared for new challenges from future innovations.

10. Digital Marketing (MKTG220)

The development of new digital technologies has fundamentally changed how consumers interact with brands and each other. Marketing is no longer about pushing a sales message to a potential buyer. Businesses have to enable conversations with consumers to engage prospects with relevant content that will lead to positive actions for commercial impact.

To be effective, marketers need to employ a rigorous and holistic marketing methodology across both traditional and new-emerging techniques. This SMU-X course will provide students with the relevant knowledge, perspectives, and practical skills required to develop digital marketing strategies that leverage the opportunities inherent on digital platforms, including web marketing and social media marketing. The emphasis of this course is on understanding the various digital platforms available, how to build digital marketing strategies, and how to track their effectiveness.

The course includes applicable theory, empirical analysis, and practical examples to develop the key learning points. The class format will consist of a combination of lectures, case study discussions, and guest speakers with relevant industry experience.

11. Interaction Design Communication (COMM255)

Most difficulties with digital technologies can be avoided through human-centered design so that people can focus on the interaction, not on the technology. This course provides an introduction to the user experience (UX) practices, theories, and real-world approaches that can help you prepare for work at some of the most innovative technology companies of today that obsess over their users' needs, feedback, and satisfaction. With a specific focus on digital communication technologies, you can learn how to create user experiences that enhance and augment the ways people work, communicate, and interact. Through a series of lectures, hands-on tutorials, and project-based assignments, you will acquire skills in all four basic activities of interaction design: discovery, design, prototyping, and evaluation. You and your project group will learn the interaction design process as you design a technology solution for a communication user need of your own choosing.

12. Online Business and Marketplaces (OPIMXXX)

- Work-in-progress -

13. Managing Strategic Change and Digital Transformation (MGMT236)

To achieve superior performance in an increasingly dynamic and uncertain global business environment, companies in every industry must create internal capability to harness strategic change for sustainable competitive advantage. However, companies that are able to strategically change their entrenched ways of doing things and then reclaim leading positions are the exception rather than the rule. With the industry 4.0 upon us and fast advancement in digital technologies, firms in many industries would find it even more pressing but challenging to build the managerial capabilities to cope with the digital transformation that will reshape the business landscape tremendously for the future. Against this backdrop, this course discusses how companies can effectively manage the strategic change and digital transformation that will significantly impact the way the business is configured for competitive advantage. Besides the internal managerial challenge, the course also emphasises that companies must cope with strategic interactions with different industry players to create value collectively and continuously. With respect to digital transformation, the course discusses digital concepts and technologies such as omni-channels, platforms, eco-systems, blockchain, IOT, AI, and cloud computing etc. that impose both challenges and opportunities for strategic change management in the increasingly technology-based, internet-based, and data-based business contexts.

****