BSc (IS) Programme
Student Handbook
(For students admitted from AY2015-16 and onwards)
TABLE OF CONTENTS

OVERVIEW ....................................................................................................................................................... 3
SMU MISSION ...................................................................................................................................................... 3
ACCESSIBILITY AND ACCOMMODATIONS ......................................................................................... 3
ACADEMIC INTEGRITY .................................................................................................................................... 3
DISTINCTIVE FEATURES OF SIS ..................................................................................................................... 3
LEARNING AND SKILL OUTCOMES FOR SIS STUDENTS ................................................................... 4
CURRICULUM ..................................................................................................................................................... 5

INFORMATION SYSTEMS – 16 COURSES ........................................................................................................ 5
  Foundations .................................................................................................................................................. 5
  Advanced Topics ........................................................................................................................................ 5
  IS Project and Electives ............................................................................................................................ 5
SMU FOUNDATION REQUIREMENTS – 3 COURSES .................................................................................. 6
UNIVERSITY CORE REQUIREMENTS – 4 COURSES .................................................................................. 6
BUSINESS ORIENTED ELECTIVES (BOE) – 6 COURSES ........................................................................ 7
UNIVERSITY ELECTIVES (MODES OF THINKING) – 1 COURSE ............................................................. 7
UNIVERSITY ELECTIVES (GLOBALISATION STUDIES) – 1 COURSE ...................................................... 7
UNIVERSITY ELECTIVES (ASIAN STUDIES) – 1 COURSE ....................................................................... 7
FINISHING TOUCH (FT) PROGRAMME (7 COMPULSORY WORKSHOPS) ........................................... 8
INTERNSHIP PROGRAMME (10-WEEK ATTACHMENT) ............................................................................ 8
  LinkedIn Profile ........................................................................................................................................ 8
  DKHMCC Internship Guidelines ............................................................................................................ 9
  Internship Periods .................................................................................................................................... 9
  Internship Grading .................................................................................................................................. 9
COMMUNITY SERVICE (CENTRE FOR SOCIAL RESPONSIBILITY) ........................................................... 11

SECOND MAJORS .......................................................................................................................................... 12

MAJORS OFFERED BY SCHOOL OF INFORMATION SYSTEMS ..................................................................... 14
  Analytics................................................................................................................................................... 14
  Analytics with Track in Accounting Analytics ....................................................................................... 14
  Analytics with Track in Advanced Technology for Analytics ............................................................... 15
  Analytics with Track in Marketing Analytics .......................................................................................... 15
  Analytics with Track in Operational Analytics ....................................................................................... 16
  Analytics with Track in Urban & Regional Analytics ............................................................................. 16
  Analytics without Track .......................................................................................................................... 17
  Advanced Business Technology - Banking Processes & Technology Track ............................................ 17
  Advanced Business Technology - Enterprise Systems & Solutions Track ............................................. 18
  Advanced Business Technology – Information Security and Assurance Track .................................... 19
  Advanced Business Technology - Technopreneurship Track ................................................................ 20
  Advanced Business Technology – without Track ............................................................................... 21
  Information Systems (for Non-IS students) ............................................................................................. 22

DOUBLE DEGREE PROGRAMME ................................................................................................................. 23

TRANSFER OF PROGRAMME ...................................................................................................................... 24
OVERVIEW

The SMU School of Information Systems (SIS) undergraduate curriculum leads to the award of the degree of Bachelor of Science in Information Systems / BSc (IS). SIS was created to extend SMU’s mission into the realm of business-focused information technology.

SMU MISSION

- To produce broad-based, creative and entrepreneurial leaders for the knowledge-based economy
- To generate leading edge research with global impact
- Commitment to an interactive, participative and technologically-enabled learning experience

ACCESSIBILITY AND ACCOMMODATIONS

SMU strives to make learning experiences accessible for all. If you anticipate or experience physical or academic barriers due to disability, please inform SIS Dean’s Office immediately. You are also welcome to contact the university's disability services team if you have questions or concerns about academic provisions: included@smu.edu.sg.

ACADEMIC INTEGRITY

All acts of academic dishonesty (including, but not limited to, plagiarism, cheating, fabrication, facilitation of acts of academic dishonesty by others, unauthorized possession of exam questions, or tampering with the academic work of other students) are serious offences.

All work (whether oral or written) submitted for purposes of assessment must be the student’s own work. Penalties for violation of the policy range from zero marks for the component assessment to expulsion, depending on the nature of the offense.

When in doubt, students should consult the instructors of the course. Details on the SMU Code of Academic Integrity may be accessed at http://www.smuscd.org/resources.html.

DISTINCTIVE FEATURES OF SIS

- A focus on business process innovation and transformation through the architecture, design and delivery of enterprise information systems
- Integration of business and technology analysis in a sector context
- New learning models
- A learning contract with key stakeholders (students, faculty, external partners)
- Research that links theory and practical impact
- A strategic partnership with Carnegie Mellon University in education and research
LEARNING AND SKILL OUTCOMES FOR SIS STUDENTS

The SIS undergraduate programme emphasizes on the following skills:

- Integration of business & technology in a sector context
- IT architecture, design and development skills
- Project management skills
- Learning-to-learn skills
- Collaboration (or teams) skills
- Change management skills for enterprise systems
- Skills for working across countries, cultures and borders
- Communication skills

At the same time, the curriculum offers a broad-based and liberal education that provides student with a broader perspective of the work environment and the world at large. In order to accomplish this objective, the curriculum is structured into 4 sections:

<table>
<thead>
<tr>
<th>Course Units</th>
<th>Period of Study</th>
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<tbody>
<tr>
<td>Information Systems</td>
<td></td>
</tr>
<tr>
<td>Foundations</td>
<td>5*</td>
</tr>
<tr>
<td>Advanced Topics</td>
<td>6</td>
</tr>
<tr>
<td>IS Project</td>
<td>1</td>
</tr>
<tr>
<td>IS Depth Elective</td>
<td>4</td>
</tr>
<tr>
<td>Core Courses</td>
<td></td>
</tr>
<tr>
<td>SMU Foundation Courses</td>
<td>3**</td>
</tr>
<tr>
<td>SMU University Core</td>
<td>4</td>
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<tr>
<td>Business Oriented Electives</td>
<td></td>
</tr>
<tr>
<td>Compulsory</td>
<td>2</td>
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<tr>
<td>Electives</td>
<td>4</td>
</tr>
<tr>
<td>University Electives</td>
<td></td>
</tr>
<tr>
<td>Modes of Thinking</td>
<td>1</td>
</tr>
<tr>
<td>Globalisation Studies</td>
<td>1</td>
</tr>
<tr>
<td>Asian Studies</td>
<td>1</td>
</tr>
<tr>
<td>General Education (GE)</td>
<td>4***</td>
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<tr>
<td>Internship Programme</td>
<td></td>
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<tr>
<td>Community Service</td>
<td></td>
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<tr>
<td>Total Required</td>
<td>36</td>
</tr>
</tbody>
</table>

* Students with prior background may apply to sit in for waiver tests for some modules to qualify for exemptions

** Up to three courses may be exempted for individuals with prior background.

*** Up to 3 courses may be exempted for individuals with prior background. Students need to complete a compulsory GE – Computational Thinking.
The curriculum consists of 36 course units, at least 10-week internship programme (full-time and continuous) and 80 hours of community services. All areas of the curricular requirements are pursued simultaneously throughout the 4 years.

**CURRICULUM**

**INFORMATION SYSTEMS – 16 COURSES**

**Foundations**
1. Seminar on IS Management
2. IS Software Foundations
3. Object Oriented Application Development
4. Data Management
5. Software Engineering

**Advanced Topics**
1. Enterprise Integration
2. Information Security and Trust
3. Process Modelling & Solution Blueprinting
4. Architectural Analysis
5. Enterprise Web Solutions
6. Interaction Design and Prototyping

**IS Project and Electives**
1. IS Application Project
2. IS Depth Elective 1 (Any IS Technology Depth Elective)
3. IS Depth Elective 2 (Any IS Technology Depth Elective)
4. IS Depth Elective 3 (Any IS Technology or IS Management Depth Elective)
5. IS Depth Elective 4 (Any IS Technology or IS Management Depth Elective)

See list of IS Depth Electives at:
http://sis.smu.edu.sg/bsc-information-systems/learning/curriculum/courses/depth-electives

The application project and electives enable the SMU Information Systems students to develop the additional depth and experience required to become Business IT professionals. The students can use the project and electives to realize their own version of our “3 Pillars Strategy” by using these courses to concentrate on how to apply IT solutions to problems within a particular industry sector (e.g. financial services, logistics & supply chain, or healthcare services) or to one of the functional areas of business (e.g. accounting, economics, finance, marketing, operations). The students can also use the project and electives to build up competence in one of our four recommended Business IT professional tracks options: 1) banking processes and technology, 2) enterprise systems and solutions, 3) information security and assurance, 4) technopreneurship.

Projects provide students with practical experience to define, design and deploy business solutions. Students apply their knowledge and skills to effectively participate in a team effort to complete a challenging focused IS project such as:
1) **Application development** – build a working system, prototype or proof of concept. Students will develop a new application or build upon/integrate existing applications into a new system. Working in teams they will experience in the life cycle of a system from concept through delivery. They will deliver a working system that addresses a real problem.

2) **Technology prototype** – experiment by evaluating the capabilities of similar or competing technologies addressing a business-IT problem. The focus here is a deep understanding and benchmarking of existing technology or applications.

3) **Faculty-directed research** – Students may carry out their projects with a research faculty member. The expected project deliverable could be a survey of the state-of-the-art in a selected research area, or novel solutions and techniques targeted at the academic community. The research interests of SIS faculty members can be found here: [http://sis.smu.edu.sg/sis-research-overview#faculty-by-priresprj-areas](http://sis.smu.edu.sg/sis-research-overview#faculty-by-priresprj-areas).

Electives provide students with the opportunity to explore a topic of interest in greater depth. The list of SIS undergraduate electives is shown [http://sis.smu.edu.sg/bsc-information-systems/learning/curriculum/courses/depth-electives](http://sis.smu.edu.sg/bsc-information-systems/learning/curriculum/courses/depth-electives). Advanced electives in the areas of computer science, information technology, information systems or e-commerce taken during an International Exchange can often be approved for use as an IS depth elective. Students should check with the SIS Dean’s Office to see if the electives they are considering to take while overseas can be used to fulfill one or both of the depth elective requirements.

In selected cases, electives offered by the other five schools at SMU can be taken as BSc (IS) management depth electives. For example, the Lee Kong Chian School of Business offers courses on Digital Marketing and Marketing Analytics; the School of Accountancy offers a course on Accounting Information Systems and Enterprise Accounting Systems; the School of Law offers Intellectual Property Rights and IT and the Law; the School of Economics offers Applied Regression Methods and Economic Forecasting; and the School of Social Sciences offers Social Networks. SIS students must meet the pre-requisites for these courses specified by the respective schools. Also, there might be availability restrictions that apply for enrolling in these specialized electives.

**SMU FOUNDATION REQUIREMENTS – 3 COURSES**
1. Calculus
2. Introductory Economics
3. Programme in Writing and Reasoning

**UNIVERSITY CORE REQUIREMENTS – 4 COURSES**
1. Business, Government & Society
2. Management Communication
3. Ethics & Social Responsibility
4. Leadership & Team Building
BUSINESS ORIENTED ELECTIVES (BOE) – 6 COURSES

Compulsory Courses (2)
These courses provide all BSc (IS) students with a stronger foundation in quantitative thinking skills and analysis skills.
1. Computer as an Analysis Tool
2. Introductory Statistics or Introduction to Statistical Theory

Electives (4)
The other four BOEs will broaden and deepen students' understanding of the basic knowledge and skills that are required to manage and direct an enterprise. This could include a basic competency in business theories and concepts, legal requirements, accounting principles, social and psychological aspects, along with working tools essential in the modern business environment. They lay the groundwork for a better understanding of the roles that technology plays in today's businesses.

Students can choose from the list of Business-Oriented Electives which can also be used to double-count with their second major requirements (excluding ISTDEs). For double-counting help, please refer to the wiki: https://wiki.smu.edu.sg/sis/Second_Major

UNIVERSITY ELECTIVES (MODES OF THINKING) – 1 COURSE

Choose from:
1. Managing in a Volatile, Uncertain, Complex and Ambiguous Context
2. Creative Thinking + Analytical Skills

UNIVERSITY ELECTIVES (GLOBALISATION STUDIES) – 1 COURSE

Choose any 1 (sample list):
1. International Economics
2. International Business
3. Economic Development

UNIVERSITY ELECTIVES (ASIAN STUDIES) – 1 COURSE

Choose any 1 (sample list):
1. Asian History, Culture and Values
2. Contemporary Southeast Asian Studies
3. Asian Study Mission

UNIVERSITY ELECTIVES (GENERAL EDUCATION) – 4 COURSES

Compulsory
Computational Thinking (http://sis.smu.edu.sg/computationalthinking)
Choose any 1 (sample list):
1  Art: East and West
2  Understanding Societies
3  Intercultural Communication
4  Biological Models for Business Applications
5  Environmental Science

Note: The sample lists are not exhaustive and are subject to changes. Please refer to OASIS for more courses.

FINISHING TOUCH (FT) PROGRAMME (7 Compulsory Workshops)

The Finishing Touch (FT) programme, administered by Dato’ Kho Hui Meng Career Centre (DKHMCC), consists of a series of Career Preparation & Enrichment workshops to prepare students for internships, job applications and necessary skills for future career success.

Programme Outline:

<table>
<thead>
<tr>
<th>Year One Compulsory FT Workshops</th>
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</thead>
<tbody>
<tr>
<td>FTW 101  Self-Discovery and Awareness</td>
<td></td>
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<tr>
<td>FTW 102  Career Planning</td>
<td></td>
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</tbody>
</table>

Note: FTW101 and FTW 102 are pre-requisites for enrolment into Year Two FT Workshops.

<table>
<thead>
<tr>
<th>Year Two Compulsory FT Workshops</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>FTW 201  Job Search Strategies</td>
<td></td>
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<tr>
<td>FTW 202  Résumé and Cover Letter writing</td>
<td></td>
</tr>
<tr>
<td>FTW 203  Social Etiquette and Groom for Success</td>
<td></td>
</tr>
<tr>
<td>FTW 204  Personal Branding and Networking Skills</td>
<td></td>
</tr>
<tr>
<td>FTW 205  Interviewing Skills</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Year Three/ Four Optional FT Workshops</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>FTW 301  Advanced Résumé and Cover Letter Writing</td>
<td></td>
</tr>
<tr>
<td>FTW 302  Advanced Interviewing Skills</td>
<td></td>
</tr>
<tr>
<td>FTW 303  Assessment Centres</td>
<td></td>
</tr>
<tr>
<td>FTW 304  Evaluation of Job Offers and Managing Workplace Relationships</td>
<td></td>
</tr>
</tbody>
</table>

Students must successfully complete the compulsory Year 1 and Year 2 FT workshops as part of the fulfilment of their graduation requirements.

For more information, please refer to OASIS > Career Services >> The Finishing Touch Programme.

INTERNERSHIP PROGRAMME (10-week Attachment)

Dato’ Kho Hui Meng Career Centre (DKHMCC) manages all internship placements for students at SMU. All students from School of Information Systems (SIS) must complete an attachment in the area of Information Systems for a minimum of 10-weeks (continuous and full-time) internship as part of their graduation requirement. (Note: There is NO exemption from Internship for SIS students. Please refer to FAQ on SIS Internship for more information - http://sis.smu.edu.sg/sites/default/files/sis/faq_on_sis_internships.pdf)

LinkedIn Profile

At SIS we encourage all students to have their own LinkedIn profile to showcase the skills and competencies that they have acquired.
DKHMCC Internship Guidelines

Full-time matriculated students can start their internship after successfully completing two terms and having attended an internship briefing.

To have a successful internship, do prepare and plan ahead. Below are some points to note:

- Students may source for their own internship, or browse through the internship opportunities on OnTRAC II.
- Prior approval must be attained for all internships before embarking on the stint.
- For self-sourced internships, students must submit a self-proposal via OnTRAC II for DKHMCC’s approval. The same guidelines and process will apply to students with internship obligations as part of their scholarship.
- Overseas Internships require valid visa and travel insurance before DKHMCC’s approval is granted.
- The approved internship must be carried out on a full-time basis for a total of at least 10 weeks completing 400 hours.

Accountancy, Information Systems and Law students have specific requirements for internship. Double Degree students are to ensure that they satisfy the criteria of internship set for both primary and secondary degree programmes as part of the fulfilment of their graduation requirements.

Note:
Failure to attempt the e-Internship Briefing and/or failing the e-Quiz will not allow you to view or apply for any internships. Such students’ internships will not be recognised by SMU and will not count towards your graduation requirement.

Internship Periods

Students are recommended to embark on their internship during Summer vacation break or during term-time*.

*During term-time (after Year 2), students embarking on full-time internships will have to apply for Leave of Absence (LOA) in advance. Foreign students holding Student Pass need to refer to MOM Rules on Local Internship (for foreign students only) in OASIS > Study >> Internship/Community Service for additional info. Please read up the LOA policy via OASIS > Study >> Info on Leave of Absence and the refund policy via OASIS > SMU Undergraduate Regulations & Procedures >> Leave of Absence. Students need to initiate the application for LOA as this process is not automatic.

On completion of a 10-week internship as part of their graduation requirement, students may embark on part-time internships subjected to approval by DKHMCC. Student pass holders are however to keep to a maximum of 16 hours of work per week.

Internship Grading

Students’ Internship will be graded and considered complete only when submitted documents are assessed to be satisfactory and meeting the objectives of the internship programme, in which case the internship will be given an overall “pass” grade.

For more information, visit ontrac.smu.edu.sg; alternatively you may refer to OASIS > Career Services >> Internship
• Internship Report
At the end of the internship, students must submit an internship report within one month from the last day of the internship stint. Graduating students are to note the cut-off date for graduation and work out the internship report submission deadline accordingly; bearing in mind a 2 week lead time is required for the evaluation of the internship report. To complete the internship report, students are to access the report via OASIS > Career Services >> Participation and Grading Details.

• Performance Appraisal
A performance appraisal will also be required of the Supervisor / Reporting Officer, under whose supervision the student completed the internship to give feedback on the students’ performance. Where a student scores below average in his/her "Overall Grading" in the Performance Appraisal, that internship placement will not be recognised towards the fulfilment of the required 10-week internship requirement.

• Internship Poster
As part of the internship requirement, SIS students MUST submit an A3 sized poster (in .zip file which should not exceed 4 MB). The Internship Poster should showcase their scope of duties, project and experience during the internship. Students in the same internship company with different job scopes must submit separate internship posters. Group submission of internship poster is permitted when a group of students (maximum of 5 in a group) are interning at the same internship company and working on the same project. Quality of the jointly completed poster must be maintained. Students MUST submit the poster via OASIS > Career and Jobs >> Participation and Grading. Guided instructions can be found in OnTRAC II. SIS does not accept posters via email.
Guidelines and information to include in the poster:
- Company and nature of the internship
- Most challenging aspect of the internship
- Please be careful with sensitive information
- The overall presentation of the exhibits should be cleared by the internship companies.
For more information on internship poster guidelines, visit OASIS > Resources > SIS Resources >> Internship Posters Guidelines.

• Submit Internship Closure Form
https://docs.google.com/spreadsheet/viewform?formkey=dDRvcDhtQ1hOQkdXeXdyWmVDbXhxREE6MQ
After completion of the internship, please email DKHMCC to inform them of your completion so that your internship weeks will be recognised in the system. Submit the Internship Closure Form after you have uploaded your ePoster in OASIS.

• ePoster Status
Students can check the status of your ePoster
https://docs.google.com/a/smu.edu.sg/spreadsheet/ccc?key=0ArTLbMUMT2VpdFhaZURGcGt0MDRMU2FtQ0p4eGZQYmc#gid=0
There are different tabs/worksheets for different intakes, so please go to the correct tab/worksheet.
1) If your ePoster status is “OK”, it means SIS has given DKHMCC the “ok” to proceed with your internship grading, so please DO NOT email to SIS School Managers to check why your internship is not graded. Check with DKHMCC.
2) If your ePoster status is “Pls revise”, it means YOU still owe SIS a revised copy of the ePoster, so please resubmit the ePoster in OASIS and notify the SIS School Manager when done.
3) If your ePoster status is “blank”, it means SIS is still processing your ePoster; so please be patient while SIS School Manager gets to your poster (we usually clear the graduating students’ posters first).

(NOTE: To access the file to check your ePoster status, please sign in using your SMU eLearn account eg. tan.tan.2013@smu.edu.sg. If you are logged in using your OWN GMAIL account, you will not be able to view the file.)

COMMUNITY SERVICE (Centre for Social Responsibility)
Students are required to be actively involved, to serve and give back to society with a minimum of 80 hours. This is to inculcate in students the value of being responsible and civic-minded citizens of society. Thus, they are encouraged to start their community service attachment early, preferably in the first year of their study.

As preparation for Community Service Projects are essential, students must first attend the compulsory Community Service Briefing. This briefing is to set the tone for community service as an SMU graduation requirement; without which the community service rendered will not be acknowledged as part of the fulfilment of the graduation requirements.

Students may work with a maximum of three Organizations to fulfil the first 80 hours. At the end of the attachment, the Host Organizations are required to appraise the students’ performance.

After completing the first 80-hour requirement, students must submit a written report through SMU Oasis. Students' Community Service will be graded and considered complete only when submitted documents are assessed to be satisfactory and meeting the objectives of the community service programme, in which case the Community Service will be given an overall "pass" grade.

For more information, please refer to OASIS > Career Services >> Community Service.
SECOND MAJORS

All SIS students are strongly encouraged to pursue a second major either with SIS or in a non-IS concentration in one of the other schools of SMU.

Offered by Lee Kong Chian School of Business

- Corporate Communication
- ** Finance – with concentrations in (1) Wealth Management, (2) International Trading, (3) Investment Banking and (4) Financial Risk Analysis
- Strategic Management – with concentration in Entrepreneurship
- Marketing
- Operations Management
- Organisational Behaviour & Human Resources
- Quantitative Finance

** For students admitted in AY2013-14 and later, to be eligible to declare a Finance major or Finance major with any concentration, students have to obtain: a minimum grade of ‘B-’ for FNCE101 Finance, or a minimum grade of ‘B-’ for FNCE102 Financial Instruments, Institutions & Market or a minimum grade of ‘A-’ for FNCE103 Finance for Law (to be taken only by LLB students).

Offered by School of Accountancy

- Accounting – with tracks in (1) Financial Management, (2) Risk Management & Assurance and (3) Taxation

Offered by School of Economics

- Actuarial Science – with tracks in (1) Actuarial Analyst and (2) Risk Analyst
- Applied Statistics
- Economics – with track in Quantitative Economics

Offered by School of Information Systems

- Advanced Business Technology without track
- Advanced Business Technology with tracks in
  - Banking Processes & Technology
  - Enterprise Systems & Solutions
  - Information Security & Assurance
  - Technopreneurship
- Information Systems (for Non-SIS students)
- Analytics without track
- Analytics with tracks in
  - Accounting Analytics
  - Advanced Technology for Analytics
  - Marketing Analytics
  - Operational Analytics
  - Urban & Regional Analytics

Offered by School of Law

- Legal Studies
Offered by School of Social Sciences

- Arts and Culture Management
- Political Science
- Psychology
- Sociology
- International and Asian Studies
- Public Policy and Public Management

All students MUST declare their First as well as Second (if any) Major or Major with Track within their first 4 regular terms of study (inclusive of term on leave of absence and/or external study programme such as international exchange programme). Please refer to OASIS > Study > Enrolments & Withdrawals >> Info on Declaration/Change of Major/Major with Track/Concentration for more info.

For details on the second major requirements, please refer to OASIS > Study >> Advisement and Curriculum. Alternatively, please refer to our wiki for useful FAQs and curriculum planning templates to assist in planning for academic progression: https://wiki.smu.edu.sg/sis/Second_Major
MAJORS OFFERED BY SCHOOL OF INFORMATION SYSTEMS

All IS compulsory/core courses cannot be double counted towards courses required for second majors offered by SIS.

Analytics

Today’s business organizations produce gigantic amount of data. These data come from multiple sources such as databases, key performance indicators, e-mails, documents, web information, etc.

How do business managers make sense of the flood of these various types of data and information? How do they transform these information inputs into intelligence that support better decision making?

In the Analytics 2nd Major you will learn and experience the concepts, technologies and applications that are used to gather and analyze data and information with respect to your chosen field of specialization or track.

Within the Analytics 2nd major, students can choose to specialize in one of the following five tracks: (1) Accounting Analytics, (2) Advanced Technology for Analytics, (3) Marketing Analytics, (4) Operational Analytics and (5) Urban & Regional Analytics. Students can also choose to do Analytics without track. More information at http://sis.smu.edu.sg/2nd-majors-analytics

SIS Faculty Advisor for Analytics with/without tracks: Seema CHOKSHI

Analytics with Track in Accounting Analytics

This involves analytics applied to cost analysis, understanding revenue trends and the overall profitability of various components of the enterprise. These include an in depth analysis of cash obligations of an organization along with the overall understanding of accounts receivables to make key business investment decisions. Accounting Analytics enables insight into the general ledger, provides visibility into performance against budget and the way staffing costs and employee or supplier performance affects revenue and customer satisfaction.

To fulfil the Accounting Analytics track, students need to complete the following courses:

- 2 Foundation Courses
  - Computational Thinking
  - Analytics Foundations
- Any 3 Track Specific Courses
  - Accounting Information Systems
  - Enterprise Accounting Systems
  - Data Management (for NON-SIS students) / Data Warehousing and Business Analytics (for SIS students)
• 2 Additional Analytics Electives
• 1 Analytics Practicum (where students will work in partnership with external organizations to apply what they have learnt to real-world problems)

Analytics with Track in Advanced Technology for Analytics

This includes a deeper coverage of the methods, data management, software applications, and systems used for analytics applications. This includes courses on advanced data management, data warehousing, data mining, machine learning, text and social media mining, geospatial data analysis, data visualization, optimization, and agent-based modeling and simulation. These courses will use analytics application examples from marketing, operations, urban & regional analytics and other areas as well.

To fulfil the Advanced Technology for Analytics track, students need to complete the following courses:
• 2 Foundation Courses
  • Computational Thinking
  • Analytics Foundations
• Any 3 Track Specific Courses
  • Advanced Data Management
  • Data Warehousing and Business Analytics
  • Intelligent Business Gaming
  • Data Mining and Business Analytics
  • Visual Analytics Business Intelligence
  • Applied Regression Methods
  • Internet of Things: Technology and Applications
• 2 Additional Analytics Electives
• 1 Analytics Practicum (where students will work in partnership with external organizations to apply what they have learnt to real-world problems)

Analytics with Track in Marketing Analytics

This includes analytics applied to customer acquisition, customer engagement and retention, product planning, bundling and pricing and related marketing concerns. It also includes using social media and social network analytics for marketing and consumer interaction. This brings together insights from multiple marketing initiatives to understand the effectiveness of existing programs and evolve them along with the trends and preferences of customers. This critical understanding helps in effective usage of marketing dollars and is one of the most valued uses of analytics for businesses around the world.

To fulfil the Marketing Analytics track, students need to complete the following courses:
• 2 Foundation Courses
  • Computational Thinking
  • Analytics Foundations
• Any 3 Track Specific Courses
  • Customer Relationship Management
  • Digital Marketing
  • Marketing Analytics
• Marketing Information Systems
• Marketing Research
• Search Engine Technologies
• Social Analytics and Applications
• 2 Additional Analytics Electives
• 1 Analytics Practicum (where students will work in partnership with external organizations to apply what they have learnt to real-world problems)

Analytics with Track in Operational Analytics

This includes analytics applied to addressing challenges in resource planning, scheduling, optimization, simulation and coordination in operational settings. Its applications include service operations such as logistics, supply chain management, e-Commerce, transportation, health-care operations, and hospitality. Operational analytics brings together models, computational methods, tools, decision support concepts and systems that enable a decision maker to react adaptively to dynamically changing and uncertain business environments.

To fulfil the Operational Analytics track, students need to complete the following courses:

• 2 Foundation Courses
  • Computational Thinking
  • Analytics Foundations
• Any 3 Track Specific Courses
  • Decision Analysis
  • High Performance Warehousing and Fulfilment
  • Computer Simulation
  • Managing Process Improvement
  • Supply Chain Processes & Technology
  • Enterprise Analytics for Decision Support
  • Internet of Things: Technology and Applications
• 2 Additional Analytics Electives
• 1 Analytics Practicum (where students will work in partnership with external organizations to apply what they have learnt to real-world problems)

Analytics with Track in Urban & Regional Analytics

This includes analytics applied to public sector and societal concerns. For example, analytics applications for healthcare service delivery, transportation service delivery, social services delivery, and housing needs. It also includes analytics for understanding income distributions, crime patterns, marriage and fertility patterns, and population patterns.

To fulfil the Urban & Regional track, students need to complete the following courses:

• 2 Foundation Courses
  • Computational Thinking
  • Analytics Foundations
• Any 3 Track Specific Courses
  • Geospatial Analytics for Business Intelligence
- Social Networks
- Research Methods in Sociology and Political Science
- 2 Additional Analytics Electives
- 1 Analytics Practicum (where students will work in partnership with external organizations to apply what they have learnt to real-world problems)

**Analytics without Track**

Students who chose this option will learn about concepts and application without special focus on a particular domain or field (unlike the other 5 tracks) and will be able to pick up courses of choice under the broader analytical category.

**To fulfil Analytics without track, students need to complete the following courses:**
- 2 Foundation Courses
  - Computational Thinking
  - Analytics Foundations
- Any 5 Analytics Electives
- 1 Analytics Practicum (where students will work in partnership with external organizations to apply what they have learnt to real-world problems)

**Advanced Business Technology**

**Advanced Business Technology - Banking Processes & Technology Track**

The Financial Services Industry is among the early adopters of IT, achieving cost efficiencies and increased revenues through new opportunities enabled by IT. The Banking Processes & Technology (BPT) is a track under the Advanced Business Technology second major. This track enables students to appreciate how IT is effectively used to support the banking and financial markets industry.

In this track, students will learn about banking environment and architecture. It provides an understanding of the various IT solutions to support banking products and processes spanning the front to back office.

All BSc (IS) students who declared Advanced Business Technology as a second major are eligible to be awarded with Banking Processes & Technology Track upon graduation if they declared this track and fulfilled the requirements.

**To fulfil the ABT (BPT) track, students need to complete the following courses:**
- Computer as an Analysis Tool
- 5 IS Technology Depth Electives, 2 of which must be from the following:
  - Retail Banking Processes and Technology
  - Financial Markets Processes and Technology
  - ePayments Processing & Technology
- Any 1 IS Management Depth Elective (Financial Services Technology & Operations Study Mission is Strongly Recommended)
- Any 1 IS Technology or IS Management Depth Elective

The list of ISMDE and ISTDE courses can be found from:
**Note:**

Students with special interest in banking processes, operations and technology solutions are strongly encouraged to take some of the courses in finance that are offered by the Lee Kong Chian School of Business. These courses can be counted towards their Business Oriented Electives.

*SIS Faculty Advisor for Banking Processes and Technology Track: Alan MEGARGEL*

**Advanced Business Technology - Enterprise Systems & Solutions Track**

Enterprise Systems & Solutions (ESS) is a track under the Advanced Business Technology second major.

Enterprise systems support core business processes of firms such as financial accounting and control, procurement, fulfilment, production planning, supply chain, customer relationship management, and human capital management. Traditionally, organizations used one or more stand-alone packaged applications or home-grown “spaghetti systems” to support these processes. However, more recently, organizations are developing innovative solutions by adapting these core processes to make them more flexible and agile. Organizations are composing processes on the “fly” by reusing parts of the existing core internal processes and external processes. Additionally, organizations are leveraging the cloud computing paradigm to move applications to the “cloud” and thus reduce infrastructure resources and enhance agility in meeting the demands of the business.

The enterprise systems and solutions (ESS) track focuses on getting students hands-on experience in using enterprise systems and composing business solutions, and leveraging the cloud computing solutions to enhance business value.

All BSc (IS) students who declared Advanced Business Technology as a second major are eligible to be awarded with Enterprise Systems & Solutions Track upon graduation if they declared this track and fulfilled the requirements.

**To fulfil the ABT (ESS) track, students need to complete the following courses:**

- Computer as an Analysis Tool
- 5 IS Technology Depth Electives, 2 of which must be from the following:
  - Enterprise Business Solutions
  - Cloud Computing and SaaS Solutions
- 1 IS Management Depth Elective
  - Supply Chain Processes and Technology
  - Any 1 IS Technology or IS Management Depth Elective

The list of ISMDE and ISTDE courses can be found from: [http://sis.smu.edu.sg/bsc-information-systems/learning/curriculum/courses/depth-electives](http://sis.smu.edu.sg/bsc-information-systems/learning/curriculum/courses/depth-electives).

**Note:**

Students may consider taking this Organizational Behaviour and Human Resources course offered by the Lee Kong Chian School of Business:
• Technology Solutions for Human Resource Development and Management

This course can be counted towards your Business Oriented Electives and/or IS Management Depth Electives.

**SIS Faculty Advisor for the Enterprise Systems & Solutions Track: Venky SHANKARARAMAN**

**Advanced Business Technology – Information Security and Assurance Track**

Information Security and Assurance Track (ISA) is a track under the Advanced Business Technology second major.

Information and communication technologies (ICT) have become the key components to support critical infrastructure services in various sectors of our society. In an effort to share information and streamline operations, organizations are creating complex networked systems and opening their networks to customers, suppliers, and other business partners. Increasing network complexity, greater information access, and a growing emphasis on the Internet have made the protection and assurance of information, systems and network, computer and cybercrime a major concern for our digital, global society. It is critical that higher education do more to train and educate its graduates in these areas of protection, security, and the analysis as we become more dependent on those skills to assess, mitigate and manage risk.

In this track, you will learn and experience the concepts, theories, skills, technologies, and applications associated with (1) data security and privacy, (2) network security (wire, wireless and Web) and forensics, (3) software and systems security and (4) information security management, which broadly covers cyber threat, risk assessment, security policy, security planning, security organization and management, business continuity, incident response and critical infrastructure protection across multiple venues.

It is highly recommended that students doing the ISA Track have a good background in networking and better understanding of legal issues. Thus, students are encouraged to take the “Networking” course as part of IS Technology Depth Electives. Students who are interested in digital forensics, audit and compliance are encouraged to take the “IT and the Law” course from the School of Law as part of IS Management Depth Electives.

All BSc (IS) students who declared Advanced Business Technology as a second major are eligible to be awarded with ISA Track upon graduation if they declared this track and fulfilled the requirements.

**To fulfil the ABT (ISA) track, students need to complete the following courses:**

- Computer as an Analysis Tool
- 5 IS Technology Depth Electives
- 1 IS Management Depth Elective
- Any 1 IS Technology or IS Management Depth Elective
  *Fulfill 3 compulsory ISTDE/ISMDE from the following:
  - Network Security (ISTDE)
  - Data Security and Privacy (ISTDE)
  - Software and Systems Security (ISTDE)
  - Information Security Management (ISMDE)
(Students are strongly encouraged to take IS204 Networking as part of the IS Technology Depth electives)

The list of ISMDE and ISTDE courses can be found from: http://sis.smu.edu.sg/bse-information-systems/learning/curriculum/courses/depth-electives.

**Note:**

Students may consider taking this course offered by the School of Law:

- IT and the Law

This course can be counted towards your Business Oriented Electives and/or IS Management Depth Electives.

*SIS Faculty Advisor for the Information Security and Assurance Track: DING Xuhua*

### Advanced Business Technology - Technopreneurship Track

Technopreneurship is a track under the Advanced Business Technology second major.

This track will equip students who are interested in technology-based entrepreneurship with the skills to start technology-based, business innovation-centered companies. These skills include:

- Business innovation methodologies
- Identifying technology based business innovations for global markets
- Building new businesses that are technology based
- Understanding the use of external resources in building a business innovation.
- Planning the growth of the business.

The track will provide students with an opportunity to develop their own technology-based business innovation.

This track will prepare SIS students and “IS second major” students from other schools interested in pursuing a technology-based business innovation leading to technology-based entrepreneurship career path. The track emphasizes immersive experiences such as a Technopreneurship Study Mission, a related internship, and requires students to identify and develop their own technology-based business innovation. The track is offered in collaboration with the SMU Institute of Innovation and Entrepreneurship (IIE). For suitable projects, IIE shall be able to help students start a company based on their innovations and raise funds from government agencies such as SPRING or from private sources.

All students who declared Advanced Business Technology as a second major are eligible to be awarded with Technopreneurship Track upon graduation if they declared this track and fulfilled the requirements.

**To fulfill the ABT (Technopreneurship) track, students need to complete the following courses:**

- Computer as an Analysis Tool
- Any 5 IS Technology Depth Electives
• 2 compulsory IS Management Depth Electives
  • IT and Business Innovation
  • Technopreneurship

(*Technopreneurship Study Mission is not compulsory, but it is highly recommended that students take this. It can be used to fulfil BOE requirement.*)

The list of ISMDE and ISTDE courses can be found from:

Students doing the Technopreneurship Track are recommended to:
• Do a related internship in the area of Technopreneurship
• Work on their proof of concept for the IS480 project

*Faculty Advisor for Technopreneurship Track: Arcot Desai NARASIMHALU*

*Notes: Technopreneurship Study Mission's requirements for students*

All students are required to follow the rules and regulations when enrolling in Technopreneurship Study Mission (and other BSM courses) in SMU.

1. Freshmen are not allowed to enrol in Technopreneurship Study Mission.

2. Students who are undertaking a Technopreneurship Study Mission in regular Term 2 should not enrol for Term 3A (or 3B) courses, if the trip overlaps with Term 3A (or 3B). Term 3 courses are conducted on a very intensive basis and therefore, it is critical for students to attend every single class. Students who choose to enrol for classes, knowing full well that they will miss classes will NOT be granted any special exemptions or excuse for the missed classes. They will be liable for any grade penalty imposed on missed classes. The instructor is also not obliged to entertain requests for consultation, or coaching for such missed lessons, or make-up for any missed assignments/assessments.

3. Students who have filed for graduation must not sign up for Technopreneurship Study Mission in subsequent terms, even if the intention is to take it for audit. The university is unable to reverse your graduation filing record, as it will have downstream impacts on resource planning and statutory reporting. Once graduation has been filed, no further enrollments will be recorded.

4. Students who are in their final term of course work are strongly advised against enrolling in Technopreneurship Study Mission, as the TSM grade will not be available by the official grade release date. Therefore, students who choose to do so will miss the graduation cut-off date and will have to delay their graduation by a term. The university cannot wait for your grade and delay everyone else's graduation.

*Advanced Business Technology – without Track*

Students who chose this option will learn about concepts and application without special focus on a particular domain or field (unlike the other 4 tracks) and will be able to pick up courses of choice under the broader analytical category.
To fulfil the ABT (without track), students need to complete the following courses:

- Computer as an Analysis Tool
- Any 5 IS Technology Depth Electives
- Any 1 IS Management Depth Elective
- Any 1 IS Technology or Management Depth Elective

The list of ISMDE and ISTDE courses can be found from: 

*SIS Faculty Advisor for Advanced Business Technology without Track: Venky SHANKARARAMAN*

Information Systems (for Non-IS students)

To fulfil the Information Systems 2nd major, Non-IS students need to complete the following courses:

- IS Software Foundations
- Data Management
- Object Oriented Application Development
- Information Security and Trust
- Any 1 course from the following:
  (a) IS Technology Core Courses (IS203; IS301; IS303; IS304; IS306)
  (b) IS Technology Depth Electives
- Any 2 courses from the following:
  (a) IS Technology Core Courses (IS203; IS301; IS303; IS304; IS306)
  (b) IS Technology Depth Electives
  (c) IS Management Depth Electives
- Computer as an Analysis Tool
DOUBLE DEGREE PROGRAMME

The double degree programme gives students an invaluable edge in the global economy and an unrivalled versatility and flexibility in career options. Under the double degree programme, a student can graduate in four years with two degree in:

- Information Systems & Business Management
- Information Systems & Accountancy
- Information Systems & Economics
- Information Systems & Social Sciences
- Law* & Information Systems

*Those aspiring to do a double degree programme with Law as one of the degrees must first be offered admission into the School of Law. Selection for a place in the double degree programme at the School of Law is highly competitive as a very small number of places is available in each year.

Students may apply for a double degree programme only at the end of year 1 or year 2 (after release of examination results), before the start of the first term of the next academic year. Please refer to OASIS > Study > Academic Calendar >> Critical Dates for the application period. For information on the criteria for applying for a double degree programme as well as the related policies, please refer to OASIS > Study > Regulations & Policies > SMU Undergraduate Regulations & Procedures >> Double Degree Programme. Note: Applications will be subjected to the Deans' approval. Being eligible to apply does not mean that your application will be approved.

To graduate with a double degree in the following combinations, the student must complete all the requirements of both degrees:

<table>
<thead>
<tr>
<th>DOUBLE DEGREE</th>
<th>REMARKS</th>
<th>NOS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSc (IS) &amp; BBM</td>
<td>Students admitted in AY2015-16 and onwards</td>
<td></td>
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<tr>
<td></td>
<td>• All courses listed under the BSc (IS) programme</td>
<td>36</td>
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<tr>
<td></td>
<td>• BBM 10 Business Core courses (5 can be fulfilled under BOE)</td>
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<tr>
<td></td>
<td>• BBM 6 Business Major courses (Please see BBM Handbook for list of majors)</td>
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</tr>
<tr>
<td></td>
<td>• 1 Entrepreneurship</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>• 1 Business Capstone</td>
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<tr>
<td></td>
<td><strong>TOTAL NUMBER OF COURSES</strong></td>
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<table>
<thead>
<tr>
<th>BSc (IS) &amp; BAcc</th>
<th>Students admitted in AY2015-16 and onwards</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• All the courses listed in the BSc (IS) programme</td>
<td>36</td>
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<tr>
<td></td>
<td>• BAcc 8 Business Subjects (1 can be fulfilled under BOE -STAT101)</td>
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<tr>
<td></td>
<td>• BAcc 9 Accounting Core courses (1 under ISDE – AIS, 4 under BOE)</td>
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<td></td>
<td>• BAcc 3 Accounting Options (1 under ISDE – ACCT411)</td>
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<td>• 1 Entrepreneurship</td>
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<td></td>
<td><strong>TOTAL NUMBER OF COURSES</strong></td>
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<td>DOUBLE DEGREE</td>
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<tr>
<td>BSc (IS) &amp; BSc (Econ)</td>
<td>Students admitted in AY2015-16 and onwards</td>
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<tr>
<td></td>
<td>• All the courses listed in the BSc (IS) programme</td>
<td>36</td>
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<tr>
<td></td>
<td>• BSc (Econ) 8 Economics Major BSc (Econ) (2 can be fulfilled under ISMDE – ECON233 and STAT201)</td>
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<td></td>
<td>• 5 Economics Core (5 under BOE)</td>
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<td></td>
<td>• 7 Economics Major Options (2 under IS Advanced Topics, and 5 under IS Foundations)</td>
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<td></td>
<td>• 1 Entrepreneurship</td>
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<td><strong>TOTAL NUMBER OF COURSES</strong></td>
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<tr>
<td>BSc (IS) &amp; BSocSc</td>
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<td>• All the courses listed in the BSc (IS) programme</td>
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<td>• BSocSc 4 Social Science Core courses (1 under BOE - STATS)</td>
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<td>• BSocSc 7 Social Science Major courses (4 under BOE)</td>
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<td></td>
<td>• BSocSc 8 Social Science Major-Related courses (6 under IS Advanced Topics, 1 under ISMDE, 1 under GE)</td>
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<td>• 1 Entrepreneurship</td>
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<td></td>
<td>• 1 Technology (1 under ISTDE)</td>
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<td>• BSocSc Capstone Seminar</td>
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<td><strong>TOTAL NUMBER OF COURSES</strong></td>
<td>44</td>
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<tr>
<td>LLB* &amp; BSc (IS)</td>
<td>Students admitted in AY2015-16 and onwards</td>
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<td>• All the courses listed in the BSc (IS) programme</td>
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<td>• LLB 18.5 Law Core (2 can be fulfilled under GE)</td>
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<td>• LLB 7.5 Law Electives (4 under BOE, 2 ISMDE, 1 GE)</td>
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<td>• LLB 2 Law-Related Courses 1 SMU Elective (1 under ISTDE)</td>
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</tr>
<tr>
<td></td>
<td><strong>TOTAL NUMBER OF COURSES</strong></td>
<td>55</td>
</tr>
</tbody>
</table>

*Those aspiring to do a double degree programme with Law as one of the degrees **must first be offered admission into the School of Law**. Selection for a place in the double degree programme at the School of Law is highly competitive as a very small number of places is available in each year.

**TRANSFER OF PROGRAMME**

All BSc (IS) students are **NOT ALLOWED TO TRANSFER OUT OF SIS TO ANOTHER SCHOOL IN SMU**. This information is communicated to all BSc (IS) freshmen during the Academic Briefings. However, SIS wants all BSc (IS) students to do a Second Major, and is also highly supportive of students who do a Double Degree.

Please get in touch with SIS Dean’s Office if you have any query on this matter.