

Chapter 2: South East Asia¹

Section 2: Singapore

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1. Government regulations and accreditation related to credit and grading systems

(1) Higher education system in Singapore

Higher education institutions in Singapore can be divided into two groups: universities with the authority to offer degrees, and non-university-type higher education institutions (special training schools) that offer diplomas. As for universities, there are three Autonomous Universities (National University Corporations) and several private universities. The three Autonomous Universities are the National University of Singapore (NUS), Nanyang Technological University (NTU), and Singapore Management University (SMU). As for private universities, there are eight branch campuses of overseas universities (see Table 1), as well as the SIM University (UniSIM), which was born when the Singapore Institute of Management (SIM) was elevated to university status in 2005. Also, there are 11 overseas universities that are affiliated with universities in Singapore and offer education and research programs (mainly in postgraduate programs) within the campuses of universities in Singapore (see Table 2). The ratio of upper secondary school students who advanced to the three Autonomous Universities in 2009 was 25% (Ministry of Education, 2009). As the massification of higher education progresses, the Singapore government is aiming at increasing the ratio to 30% by 2015.

Table 1 Overseas universities' branch campuses in Singapore

• INSEAD	• ESSEC: École supérieure des sciences économiques et commerciales(ESSEC Business School)
• University of Chicago Booth School of Business	• Digipen Institute of Technology
• German Institute of Science and Technology-TUM	• UNLV Singapore (Harrah Hotel College of The University of Nevada, Las Vegas)
• S. P. Jain Center of Management	• Tisch School of the Arts of Asia (New York University's Tisch School of the Arts)

(Source) Data from the Economic Development Board Singapore (2009)

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Table 2 Overseas universities offering programs within universities in Singapore

• Johns Hopkins University (International Medical Centre)	• Shanghai Jiao Tong University
• Georgia Institute of Technology (The Logistic Institute of Asia Pacific-NUS)	• Stanford University (Singapore-Stanford Biodesign)
• Massachusetts Institute of Technology (Singapore-MIT Alliance)	• Waseda University (Waseda-NTU)
• University of Pennsylvania Wharton School (Wharton-SMU Research Centre)	• New York University School of Law (NYU Law in Singapore-NUS)
• Technische Universiteit Eindhoven	• Cornell University (Cornell-Nanyang Institute of Hospitality Management)
• Duke University (Duke-NUS)	

(Source) Data from the Economic Development Board Singapore (2009)

As for Singapore's non-university-type national higher education institutions (special training schools) that offer diplomas, there are five polytechnics and two technical art colleges. Polytechnics offer three-year programs in engineering, business, accounting, tourism, hospitality management, information and communication, digital media, biotechnology, marine engineering, nautical studies, and nursing. Students who have graduated from a polytechnic can be transferred to a university.

Also, Singapore has a technical college called the Institute of Technical Education (ITE), which provides advanced vocational education. ITE offers technical qualifications.

(2) National policy on credit and grading systems and the third-party evaluation

Singapore has not standardized its university system at the national level, and the management and operation of universities has been based on each university's quality assurance system. As to the academic evaluation system, both NUS and NTU have the University Committee on Educational Policy and University Academic Audit Committee, and SMU has the Academic Affairs Committee (Ministry of Education, 2005, p. 27)..

However, the Quality Assurance Framework for Universities was introduced in 2003, and the external evaluation began, in which self-evaluation reports of three universities (NUS, NTU, and SMU) are reviewed respectively every three years. Also, in 2005, both NUS and NTU were incorporated, and with SMU, which had been managed as a publicly-funded and privately-operated university since its establishment, these three institutions were developed into Autonomous Universities that aim at the diversification of university functions and the promotion of competitiveness in order to respond to globalization. Accordingly, a system has been introduced to ensure the accountability of those three universities, most of whose finances are supported by government funds. Under the new system, each university is required to make and fulfill a contract with the Ministry of Education that includes the three items below.

- Policy Agreement: Strategic direction and guidance of the university-sector as a whole by the Ministry of Education
- Performance Agreement: plans and objectives set up by each university
- Quality Assurance Framework: Self-evaluation reports and their external reviews

The purpose of such assurance system on accountability, which was established along with the incorporation of universities, is to improve the evaluation system by introducing a third-party evaluation that assesses the self-evaluation of universities, based on the quality assurance system each university has established.

2. Case study: the National University of Singapore (NUS) and Nanyang Technological College (NTU)

Of the four universities in Singapore, this section describes the practice on credit and grading systems of two comprehensive, research universities: the National University of Singapore (NUS) and Nanyang Technological College (NTU). As mentioned above, the Singapore government has not standardized the educational systems of universities at the government level; it oversees and supervises universities while respecting their autonomy. Examples of the educational systems of the two universities are compared with each other below.

(1) Overview of universities

Both NUS and NTU are comprehensive, research universities in Singapore and they offer Bachelor's, Master's (coursework based and research based programs), and doctoral programs, and some diploma programs.

NUS has 23,822 undergraduates and 7,670 postgraduate students in 14 colleges (including three colleges which have only postgraduate programs). International students account for 35% of all the students (5,173 undergraduates, 4,491 postgraduate students, and 1,424 exchange students). Also, in order to provide its students with an opportunity to experience global education, it has seven campuses abroad in four countries (China, India, Sweden, and the United States.) In order to promote its cooperative relationships with partner universities, the International Relations Office has been established to operate international educational exchange programs (sending and receiving students).

On the other hand, NTU has 23,043 undergraduates and 10,026 postgraduate students in four colleges and two autonomous educational institutions attached to the university, which are the National Institute of Education (the only teacher-training institution in Singapore) and the S Rajatnam School of International Studies (graduate school). International students account for 25% of all the students (4,445 undergraduates and 3,735 postgraduate students). Also, NTU has three offices to

promote international education and exchange, each of which has a different role. The International Relations Office operates various international educational exchange programs (sending and receiving students); the Global Immersion Program Office runs the Global Immersion Program (sending students), which is one of study abroad programs at NTU and is exclusively for its undergraduate students; and the International Student Center belongs to the Office of Student Services and supports international students enrolled in NTU. Table 3 is a summary of the profile of each university.

Table 3 Profiles of NUS and NTU

	National University of Singapore (NUS)	Nanyang Technological University (NTU)
Number of colleges	14 colleges	4 colleges + 2 autonomous educational institutions attached to the university • National Institute of Education (teacher-training institution) • S Rajatnam School of International Studies (graduate school)
Number of students		
Undergraduates	23,822	23,043
Graduate students	7,670	10,026
Total	31,492	33,069
Number of international students		
Undergraduates	5,173	4,445
Graduate students	4,491	3,735
Exchange students	1,424	no data
Total	11,088	8,180
Ratio of int'l students to total students	35%	25%
Office for international education	• International Relations Office	• International Relations Office • Global Immersion Program Office • International Student Center

As for the academic calendar, NUS uses a semester system: the first semester is from August to November and the second semester is from January to May. Each semester has 17 weeks, of which 13 weeks are for classes. During the summer recess after the end of the second semester, there are two optional special terms. At NTU, Bachelor's degree programs and Master's degree programs (coursework-based programs) have the same academic calendar as that of NUS, but in Master's degree programs (coursework-based programs) there are some programs which use a trimester system (see Table 4). Of such programs, those taught in English start in July, and those taught in Chinese start in March. Also, the academic calendar for Master's degree programs (research-based programs) uses a semester system: the first semester runs from August to January and the second semester does from January to August, and each semester is divided into the first period and the second period (see Table 5).

Table 4 Academic calendar for Master's degree programs (coursework-based) at NTU: trimester system (2009–2010)

Name of program	School calendar
MBA	1st trimester: July 27–October 24 2nd trimester: November 2–February 20 3rd trimester: March 1–May 29 (Each trimester has 13 weeks of classes.)
M. Sc. (Financial Engineering)	1st trimester: July 27–October 31 2nd trimester: November 2–February 27 3rd trimester: March 1–June 19
S. Rajaratnam School of International Studies • M.Sc. (International Political Economy) • M.Sc. (International Relations) • M.Sc. (Strategic Studies) • M.Sc. (Asian Studies)	1st trimester: July 27–October 31 2nd trimester: November 9–February 27 3rd trimester: March 8–June 5 (Each trimester has 13 weeks of classes.)
Programs in Chinese (Mandarin) • M.Sc. (Managerial Economics) • Master of Public Administration	1st trimester: March 9–May 29 2nd trimester: June 8–August 29 3rd trimester: October 12–January 6

Table 5 Academic calendar for Master's degree programs (research-based) at NTU

1st semester	August 10–January 10
1st period	August 10–September 30
2nd period	October 1–January 10
2nd semester	January 11–August 29
1st period	January 11–March 31
2nd period	April 1–August 29

(2) Guidelines on credit system and quality assurance efforts

- Number of years for completion of programs
- Number of credits required for graduation
- Curriculum

(i) Bachelor's degree programs

Expected/standard years to complete a Bachelor's degree program are either three or four at both NUS and NTU. NUS offers 3-year Bachelor's degree programs, and 4-year Bachelor with Honors degree programs. Faculties of Engineering and Music offer only Bachelor with Honors degrees. On the other hand, in NTU, only College of Business offers 3-year Bachelor's degree programs in business and accountancy, and all other colleges require students to take a 4-year program in order to earn a Bachelor's degree.

At NUS, 120 or more credits are required to graduate with a 3-year Bachelor's degree and 160 credits or more are required for a 4-year Bachelor with Honors degree. At NTU, 108 or more credits are required for 3-year Bachelor's degree programs, and at least 144–146 credits for 4-year Bachelor's degree programs. In the case of engineering programs, 153–155 credits are required.

The curriculums of Bachelor's degree programs consist of General Education Modules, Specialized Education Modules, and Unrestricted Elective Modules at both NUS and NTU.

Table 6 and Table 7 compare the curriculums of 3- and 4-year Bachelor's degree programs at NUS and NTU. At NUS, the number of credits required for graduation and the number of credits for each module are decided on the whole university level. On the other hand, at NTU, it seems that those numbers of required credits are regulated not by the university but by each college or department.

Table 6 Curriculums of 3-year Bachelor's degree programs at NUS and NTU

Degree Requirements	NUS	Degree Requirements	NTU
	3-year Programs (Bachelor)		3-year Programs (Marketing)
	MC*s		AU**s
University Level Requirement		General Education Requirement	
General education	8	Core	9
Singapore studies	4	Prescribed electives	6
Breadth	8		
Sub-total	20	Sub-total	15
Program Requirement		Major Requirement	
Faculty	12-16	Core	73
Major	60-72	Prescribed electives	0
Sub-total	72-88	Sub-total	73
Unrestricted Elective	16-28	Unrestricted Electives	20
Minimum MCs required for graduation	120	Minimum AUs required for graduation	108

*MC = Modular Credit

**AU = Academic Unit

Table 7 Curriculums of 4-year Bachelor's degree programs at NUS and NTU

Degree Requirements	NUS	Degree Requirements	NTU		
	4-year Programs (Bachelor with Honors)		4-year Programs		
			MCs	Art, Design & Media	Economics
			AUs	AUs	AUs
University Level Requirement		General Education Requirement			
General education	8	Core	12	6	12
Singapore studies	4	Prescribed electives	15	15	15
Breadth	8				
Sub-total	20	Sub-total	27	21	27

Program Requirement		Major Requirement			
Faculty	12–16	Core	69	28	109
Major	88–110	Prescribed electives	39	60	12
Sub-total	100–126	Sub-total	108	88	121
Unrestricted Electives	18–36	Unrestricted Electives	9	36	9
Minimum MCs required for graduation	160	Minimum AUs required for graduation	144	145	157

(ii) Master's degree programs

There are two types of Master's degree programs: the research-based programs and the coursework-based programs. Graduation requirements for research-based Master's degree programs at NUS are two to six specialized subjects (8–24 credits), a graduate seminar (Pass/Fail), and a Master's thesis (30,000 words). Also, students must meet the 6 month minimum residency requirement, and the maximum candidature is three years with submission of their thesis. At NTU, requirements are three specialized subjects (9 credits) and a Master's thesis, plus other requirements, depending on programs. Usually, two years are necessary to complete those Master's programs, but it can be completed in as little as one year, or in three years at the most.

Graduation requirements for coursework-based Master's programs at NUS are basically 40 credits in one year or 80 credits in two years. One-year Master's degree programs admit students with similar academic backgrounds while two-year Master's degree programs admit students from diverse academic backgrounds. For both the 1-year and 2-year Master's programs, students have to earn 30 or more credits in specialized subjects or subjects related to their major, with code numbers in the 5000s or 6000s. As for the remaining number of credits, it is possible to study subjects other than their own specialization. Also, up to 16 credits can be earned by a Master's thesis or project research paper rather than by coursework. On the other hand, at NTU, there are many Master's programs that require 30 credits in one year. Some programs require coursework only, and others include a Master's thesis, which corresponds to 6 of 30 credits.

In coursework-based Master's degree programs at both NUS and NTU, MBA programs and those related to Public Policies tend to be different from others. These programs require more years of study and more credits for the completion of the programs. Also, if a student studies a part of the program at an affiliated university abroad, the number of required credits tends to increase.

- **Number of credits per course**

There are basically four credits per course in Bachelor's and Master's degree

programs at NUS and three credits per course at NTU. Practical courses, such as laboratory classes, tend to have fewer credits: two credits at NUS and one credit at NTU. In Bachelor's degree programs, graduation theses and projects and internships courses tend to have more credits: 8–12 credits at NUS and 10 credits at NTU.

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- **Credit system**

NUS and NTU use different credit systems. (see Table 8). NUS uses Modular Credit (MC), and NTU does Academic Unit (AU). At NUS, the workload of 1 MC is calculated as 2.5 hours per week. The workload includes not only contact hours in class, such as lectures, tutorials, and laboratories, but also time for homework and self-study by individuals or in small groups (study hours outside classroom). When one semester has 13 weeks of classes, the workload of 1 MC per semester is 32.5 hours.

On the other hand, NTU has a standard for calculating the workload for 1 AU in Bachelor's programs, as shown below. NTU says that the calculation of the workload is based on self-study hours (study hours outside classroom) in addition to contact hours, but no concrete distribution of hours is clearly stated.

1. 1 AU=1 hour of lecture/tutorial per week
2. 1 AU=3 hours of laboratory/fieldwork per week

Also, in Master's programs at NTU, the workload of 1 AU is defined as 13 hours in class (contact hours with the instructor in lectures, tutorials, laboratories, etc.)

Table 8 Credits and credit calculation methods at NUS and NTU

	NUS	NTU
Credits	Modular Credit	Academic Unit
Definition of workload	<u>Bachelor's and Master's program</u> in-class hours (contact hours) + self-study hours	Bachelor's program: in-class hours (contact hours) + self-study hours Master's: in-class hours (contact hours)
Number of hours of workload	<u>Bachelor's and Master's program</u> • 1 MC = 2.5 hours per week	<u>Bachelor's program</u> • 1 AU = 1 hour of lectures/tutorials per week • 1 AU = 3 hours of

		laboratory/fieldwork per week • No statement on the distribution of hours for self-study <u>Master's program</u> • 1 AU=1 contact hour with an instructor (lecture, tutorial, laboratory, etc.) per week
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- **Description of credits**

For both NUS and NTU, information on courses can be retrieved on websites for registration. Described information on the courses includes the course number, title, content, and number of credits.

NUS also describes detailed information on the workload of each course (called a module at NUS). The workload is indicated by the number of hours for five study components (Table 9). For example, if a module workload (A·B·C·D·E) of a 4-credit course lists five numbers, such as “2·1·0.5·1.5·5,” these numbers indicate the number of study hours students are expected to spend per week for the workload of each component. Students are to spend two hours at lectures, one hour at tutorials, 30 minutes in laboratories, 90 minutes on homework, and five hours on class preparation. Consequently, the workload of the 4-credit course per week is 10 hours in this case.

Table 9 Five components of workload for modules (courses) in NUS

Component	Description	Remarks
A	No. of Lecture hours	Actual contact hours per week
B	No. of Tutorial hours	Actual contact hours per week
C	No. of Laboratory hours	Actual contact hours per week
D	No. of hours for projects, assignments, fieldwork, etc.	This caters to assignments, independent studies, fieldwork, and other forms of continuous assessment that contribute toward the final grade of the module.
E	No. of hours for preparatory work	This refers to the number of hours a student is expected to spend each week on preparing for lectures and tutorials.

At both NUS and NTU, each course has a unique code. The course numbers consist of a two or three letters and numerical numbers. The letters represent the disciplines, and the numbers indicate the level of the course. In Bachelor's courses, NUS uses four-digits from 1000 to 4000, whereas NTU uses three-digits (100 to 400) for humanities courses, and four-digits (1000–4000) for science and engineering courses. As for postgraduate courses, NUS uses 5000 to 6000, and NTU uses mainly 6000s for the course of the coursework-based Master's program and 7000s for those of the research-based Master's program.

(3) Grading system

NUS uses both relative evaluation and absolute evaluation, depending on the course level, while NTU uses absolute evaluation. At NUS, absolute evaluation is used for small-sized, advanced courses, and relative evaluation is used for large-sized, basic courses in order to evaluate students' academic performance. Also, differences in marking regimes among academic fields are taken into consideration, and the final grade may be subject to moderation where necessary. Moreover, letter grades are distributed flexibly according to the judgment of the examiner (instructor). On the other hand, NTU uses absolute evaluation as the standard, and instructors set the learning objectives of each course and evaluate the students' academic performance.

Both NUS and NTU have a GPA (Grade Point Average) system and explain the system to students at their websites concerning registration and grades. In the GPA system, evaluation is based on 11 levels of five letter grades (A, B, C, D, and F) and + / -, and each letter grade corresponds to a grade point number (see Table 10). At NTU, letter grades are given based on the range of the raw score out of 100 points, but the conversion between the range of the raw score and letter grades (conversion table) is not disclosed.

Table 10 Grades

Letter grade	Grade point
A+	5.0
A	5.0
A-	4.5
B+	4.0
B	3.5
B-	3.0
C+	2.5
C	2.0
D+	1.5
D	1.0
F	0.0

At NUS, instructors are required to submit the grades within 10–12 days after the last day of the examination period. At NTU, instructors submit the grade slips (evaluation sheet) to the Dean's Office within about one week after the last day of the examination period, and then the final grades are submitted to the Office of Academic Services by the Dean's Office one week later

(4) Guidelines and quality assurance on credit transfer system in student exchange

- **Guidelines on credit transfer**

Both NUS and NTU have university-level guidelines on the minimum number of credits to be earned at the home institution (see Tables 11 and 12). After this

minimum requirement of credit numbers is fulfilled, the number of credits earned at other universities can be converted into the credits required to receive a degree (graduation). However, the letter grades cannot be transferred. The letter grades of the courses earned at other universities will be converted into Pass/Fail, and will neither be reflected in the GPA nor the grade of the degree.

Table 11 NUS University-level guidelines on the minimum number of credits to be earned at the home university

Bachelor's programs	<ul style="list-style-type: none"> • A student must complete the greater of (a) 50% of required credits for the degree program, or (b) 80 credits at NUS. These credits must be earned from the graded courses with assigned grade points. (Courses with Pass/Fail evaluation are not applicable.) • A minimum 60% of program/major credits must be graded and factored into the Cumulative Average Points (CAP). The remaining 40% of the credits may be earned through credit transfers and courses with Pass/Fail evaluation. • A minimum 16 credits of the minor requirements (24 credits) must be graded and factored into the CAP. The remaining 8 credits may be earned through credit transfers and courses with Pass/Fail evaluation.
Master's programs (coursework-based)	<ul style="list-style-type: none"> • A student must complete a minimum of 50% of the required credits at NUS. (This is the minimum standards the University set up. Specific programs may implement stricter guidelines for their program requirements.)

Table 12 NTU guidelines on the minimum number of credits to be earned at the home university

Bachelor's programs	<ul style="list-style-type: none"> • A student must study at NTU at least 2 years and fulfill a minimum 66 credits of graded courses for 3-year Bachelor's programs. • A student must study at least 3 years at NTU and fulfill a minimum 77 credits of graded courses for 4-year Bachelor's programs. • Students admitted directly to the second year of a 4-year Bachelor's program must study at least 2.5 years of study at NTU and fulfill 66 credits of graded courses. • After the guidelines above are met, credits earned at other higher education institutions can be transferred, but their letter grades will be converted into Pass/Fail and not calculated into GPA.
Master's programs (coursework-based)	<ul style="list-style-type: none"> • The guidelines regarding how many credits can be transferred from other universities could not be found. The accepted credits can be transferred to fulfill the required credits; however, their letter grades will not be calculated into GPA, just like the case of a Bachelor's program.

- **Credit transfer system**

At NUS, while the international student exchange program itself is managed by the International Relations Office (IRO), the transfer of the credits earned through an exchange program is managed by the Dean's Office in each department. The credit transfer procedures are explained at each department's website on international exchange programs though the range and content of information vary among different colleges. Business School, School of Computing, and Faculty of Science provide a list of courses at their partner universities that correspond to the courses in the curriculum of their colleges and clearly show which course credits can be transferred.

Each college has a Study Exchange Program (SEP) coordinator and an academic advisor, who review the transfer of credits earned at affiliated universities. In addition, the General Education Committee is responsible for the transfer of credits for General Education modules.

The detailed information on the credit transfer procedures was not available at NTU. However, one unique feature is that credits for a course earned at a university abroad can be transferred as credits for unrestricted electives, even if the equivalent course is not offered at NTU. In this case, the course title at the overseas university is used in the transcript. Also, it seems that, generally speaking, science and engineering departments and majors tend to be conservative when it comes to approving credit transfer. This is mainly because their curriculum is established strictly with many required courses, and step-by-step studying is required more in these departments of home institution (NTU).

- **Guidelines on credit transfer in double/joint degree programs**

Both NUS and NTU offer many double/joint degree programs run in collaboration with not only universities abroad but also with other departments in their own universities (see Table 13). Although many of the overseas partners of double/joint degree programs are European, Australian, and American universities, both NUS and NTU have some programs in collaboration with universities in Asia as well. NUS has two programs in cooperation with Japan (Bachelor's programs in Science as well as Arts and Social Science), two with China (Master's programs in Business and Chinese Language), and one with South Korea and China (Master's program in Business).

NTU has two programs in collaboration with China (Business and Medicine), one with India (Engineering), and one with Japan (Business). There are no double/joint degree programs run in cooperation with ASEAN countries.

Table 13 Number of double/joint degree programs of NUS and NTU

	With foreign schools double degree		With foreign schools joint degree		In-school double degree	
	NUS	NTU	NUS	NTU	NUS	NTU
	Bachelor's	5	1	5	0	9
Master's	14	5	5	5	4	0

At NUS, the guidelines on the minimum number of credits to be earned at the home institution are applied to double/joint degree programs run in collaboration with universities abroad as well. Students in double degree programs with double honors will require about five years of study and fulfill at least 200 credits to graduate. Students in double degree programs with honors in one discipline and a general degree in the other will require about four and a half years of study and fulfill at least 180 credits to graduate.

(5) Discussion

In Singapore, since the government has not standardized the education system or framework of universities, each university is allowed to autonomously develop its own education system, based mainly on those in the universities in the U.S. and U.K. Therefore, this report focuses on the case study of two universities, SNU and NTU since there is few to report on government level regulations.

Between these two universities, there are few similarities such as academic calendar, grade points, and GPA system as well as many differences; the naming of credits, the number of credits required for graduation, the concept and hours of workload required for one credit. However, the systems and frameworks of both universities are relatively easy to understand since they are explained clearly and in detail on their websites. The important and essential information are well disclosed and visible. As for quality assurance in education as well, each university is trying to ensure the quality of academic programs on its own initiative. It was unable to find concrete information on how and to what extent the government manages and supervises quality assurance efforts made by universities.

Both SNU and NTU are promoting international education exchange actively as a part of efforts for internationalization, aiming to become a leading global university in Asia. Under the government policy to build up an educational hub in Asia and to accept international students as a means of ensuring highly competitive/skilled human resources as future immigrants, the two universities are not only recruiting international students actively, but are also implementing various programs to offer chances for their own students to study abroad. Both universities have many joint/double degree programs with well-established

universities abroad, which have led to their confidence that the high quality of their education is internationally recognized. Also, these two universities have already established remarkable systems to transfer and approve credits earned at overseas universities through joint/double degree programs and international exchange programs. It is also remarkable that the information on such systems is disclosed in detail on their websites. For example, methods to calculate transfer credits, the treatment of the grades earned at an overseas university, and the process of credit transfer from application to approval are all described very clearly. These good practices should be adopted by universities in Japan and many other Asian countries.

It is true that Singapore does not have many universities, but the cases of the few it does have are thought-provoking in terms of to what extent the government should be involved in the matters of universities (that is, to what extent, the government should increase the autonomy of the university), including the quality assurance measures of education. This is because in Singapore, the government allows extensive autonomy of universities including the issues of education, and yet each university is developing systems and structures of international education and exchange and is steadily achieving significant results. As the globalization of higher education is advancing, one of the effective methods to use for the issues may be to converge on the accumulation of cooperation and its actual results between universities into the optimum systems.

Finally, in the city-state of Singapore, where the creation of a globalized, knowledge-based society is held up as the national agenda, and at the same time, where the issues of a low birthrate and an aging population need to be solved, comprehensive research universities tend to have their eyes on North America and Europe. This is happening not only in Singapore. Against the backdrop of international competition among universities for intellectual creation, research universities and their faculty members (researchers), and students in other Asian countries as well, are strongly interested in the West (only international student recruitment tends to be concentrated on China, India, and Vietnam). Under the circumstances, it is not easy to lead those Asian universities' interests to institutions of fellow Asian countries. Therefore, it would be difficult to promote student exchange extensively among universities within Asia unless governments of Asian countries exercise their initiatives to cooperate with one another and support universities. It is essential that Asian governments explicitly express diplomatic importance and the impact of international cooperation through large-scale student exchange as well as significance in academic exchange associated with regional unification in politics, economics, and society.

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