The Liberal Arts in a Chinese Tech University: ShanghaiTech

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A newly founded, small-scale research university geared toward international standards and competitiveness, ShanghaiTech University has three STEM divisions (information science and technology, physical science and technology, and life science and technology) and three HASS divisions (creativity and arts, entrepreneurship and management, and the humanities). The university's undergraduate education receives its inspiration from the whole-person approach, and gives particular weight to a "broadly based and in-depth" pedagogical framework, in which the liberal arts make up an indispensable component. Through interdisciplinary curricular planning, small class sizes, emphasis on interaction and openness in learning, and international exchange programs, I explore effective measures to grow general education at ShanghaiTech as well as address challenges that are unique to a Chinese tech university.

In China, what we now recognize as liberal arts have long been a centerpiece of education. Even before Confucius, the "six arts" (ritual, music, archery, chariot riding, penmanship, and arithmetic) had already acquired lofty prestige. That "a man is made by learning" has been a guiding principle for innumerable generations of Chinese educators. Our master teachers have long seen their task as more than transmitting knowledge. They placed a premium on character formation and enlightenment through life. Yet the fortunes of liberal arts in the country were advanced in a number of distinct directions. Confucianism served as the bedrock of educational practice from its inception about twenty-five hundred years ago through the late nineteenth century, when Western cultural and educational philosophies started to make their way into Chinese society. Epitomized by Peking University and Tsinghua University, modern Chinese establishments of higher education in the early twentieth century adopted their overall models from Western industrialized nations, but made a point to cultivate their own humanist curricula.

After the founding of the People's Republic of China, a Soviet-style system of higher education centered on vocational and technical expertise prevailed. And with this system's implementation, calls for the provision of well-trained

manpower for industrialization and the production of new cohorts of socialist youth, as highlighted by Isak Frumin and Daria Platonova in their essay for this volume, also became germane and prominent in China.[1] Despite a nationwide suspension during the Cultural Revolution between 1966 and 1976, this system remained paramount until the turn of 1980s, when China commenced Deng Xiaoping's "Reform and Opening Up."[2] Varying institutions then started merging to create universities where the humanities attempted again to play a role. Since the 1990s, science and technology have been generally accepted as primary forces to deliver productivity. Yet as human-centered goals for undergraduates have gained sway in Chinese higher education (for example, becoming "persons of quality" and "well-rounded citizens"), there has also been a growing interest in investing in the liberal arts as a compelling resource to understand, guide, and critically engage the unfolding social changes and global momentum. In the words of Teri A. Cannon and Stephen M. Kosslyn, as we are educating the future "leaders, creators, problem-solvers, and innovators," who must have at their disposal wider perspectives and more diverse experiences, it is essential that we cross established academic boundaries and other barriers that separate research, classroom learning, and social intervention.[3] For myself and my like-minded colleagues, the liberal arts make up an indispensable component of this new drive.

ShanghaiTech University seized a unique moment to launch its vision and programs by answering the call for intensifying scientific and technological research, and for nurturing talents in the interest of innovation. A small research institution geared toward international competitiveness, ShanghaiTech broke ground in 2013 and completed construction in 2016. The three main divisions in sciences and technologies are the Schools of Information Science and Technology, Physical Science and Technology, and Life Science and Technology. These schools are not further separated into departments. The Schools of Creativity and Arts and of Entrepreneurship and Management followed next, with the creation of the Institute of Humanities in 2019. The university is near several national research facilities, in particular the X-ray Free Electron Laser Facility and the Shanghai Clinical Research Center, both under construction. Our objective is to set up an educational-research complex that combines the strengths of an academic institution and its neighboring national research facilities, comparable in general profile to University of California, Berkeley's Lawrence Berkeley National Laboratory; Stanford's SLAC National Accelerator Laboratory; the University of Chicago's Argonne National Laboratory; and Oxford University's Diamond Light Source in the United Kingdom.

ShanghaiTech's undergraduate education receives its inspiration from the whole-person approach that goes beyond mere career preparations. Our STEM programs and HASS programs (humanities, arts, and social sciences) are arranged so that they mutually reinforce and are organically encompassed in the univer-
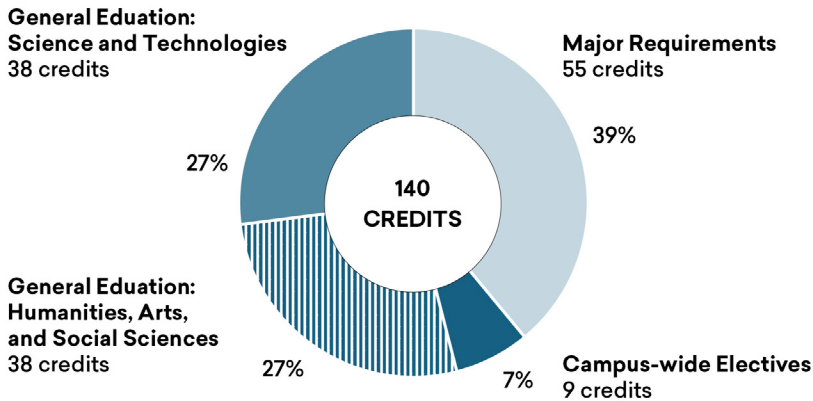
sity's comprehensive curriculum. It is by the strength of this infrastructure that ShanghaiTech looks forward to bringing forth graduates that are intellectually independent, aesthetically sensitive, and informed by in-depth understanding of both their home culture and global transformations, to become at once malleable and creative in responding to a complex and unpredictable world of infinite and constant changes. The ShanghaiTech undergraduate degree keeps to a minimum of one hundred forty credit hours, with a mandate from the Chinese Ministry of Education to lower the number of credit hours and strengthen the teaching content that each credit hour delivers (Figure 1).

Seventy-six credits of the total required credits (or about 54 percent) are assigned to general education (gen ed) courses, half of which are in natural sciences and engineering, and the other half belong to the humanities, arts, and social sciences. Fifty-five credit hours, accounting for 39 percent of the total credits, represent the courses required by the students' respective majors. And the last 7 percent are allocated for electives of the student's choice, as long as they don't overlap with courses that satisfy the student's major or gen ed requirements. Among China's tech universities, ShanghaiTech belongs to a very few that have assigned such a high percentage of classes to general education. ShanghaiTech started recruiting graduate students in 2013 and the first class of undergraduates was enrolled in 2014. This year, we reached an enrollment of 6,067 (about 4,000 graduate students and 2,000 undergraduates). Over the years, as a part of our international strategies, we deployed a 3+1 exchange program to allow undergraduate students to spend a year abroad, so at graduation, about one-third of our students have acquired international experience via this program and others, such as summer research and internships.[4] Our partners for this program include University of California, Berkeley; Harvard; MIT; University of Pennsylvania; University of Illinois at Urbana-Champaign; and a number of others. In addition, our top college graduates have been accepted at many of the world's best research universities for training for advanced degrees.

As we explore effective measures to grow liberal arts at ShanghaiTech, we face several challenges. For instance, how do we create a liberal arts curriculum within a technology-focused university that has a mandate from the Chinese Ministry of Education to limit the number of credit hours? We are making difficult choices as we increase the proportion of HASS classes without raising the current total of credit hours. In the meantime, we are addressing challenges that involve teaching and the building of a liberal arts faculty. These colleagues' classes are mostly listed as part of the gen ed requirement, to which students are often less passionately dedicated than the required courses for their majors. Plus, our liberal arts professors have to make long-term career plans without their own degree students for the time being. More generally, in addition to an overly rigorous crediting mechanism that often encourages inflexible and run-of-the mill course design, our edu-

Figure 1

Undergraduate Credit Composition at ShanghaiTech University

General Eduation:
Science and Technologies
38 credits

Major Requirements
55 credits

27%

39%

140
CREDITS

General Eduation:
Humanities, Arts,
and Social Sciences
38 credits

27%

7%

Campus-wide Electives
9 credits

Requirements for general education credits in the science and technologies include mathematics, physics, chemistry, biology, and information technology. General education credits for the humanities, arts, and social sciences include coursework such as the Civilization Series, Design Thinking, and Introduction to Economics. There are eleven undergraduate degree programs at ShanghaiTech. The above distributions may vary slightly between majors. Source : Author's compilation of data from ShanghaiTech University.

cational system is also encumbered by dated pedagogy and unnecessary subdivisions within disciplines.

There are also complexities of a social nature. Despite the widening endorsement of college-level liberal arts education, much of China's current secondary teaching is still heavily focused on performance on the national college entrance examination, which represents a once-in-a-lifetime opportunity to change the social trajectory for many students, especially those from economically disadvantaged backgrounds. College education must offer students a supportive environment where they can access the resources they need to become active and independent lifelong learners. At ShanghaiTech, we must attend to the needs of a unique cohort of science and technology students whose reading, writing, and general communication skills are often inadequate. Besides, any institution of higher education that passes muster these days must embrace a global vision, and yet we cannot dodge challenges that arise from the differences between Chinese and Western cultures. In the province of STEM education, this may be addressed with greater readiness, since hard sciences follow hard rules. In arts and humanities, however, it is less clear how to approach the abundant uncertainties and disagreements.

To address these impediments, we have taken on the task of reducing the number of required classes at ShanghaiTech, thus yielding more room for student options. Our undergraduate programs give particular weight to a "broadly based and in-depth" pedagogical framework, tending toward interdisciplinary course planning, small class sizes, as well as interaction and openness in learning. Faculty members from different schools and research institutes collaborate extensively to train students, so the students can learn to best anticipate and cater to particular needs in breadth and depth. More recently, we have also revamped our English program to infuse language education with other gen ed components in the humanities, so that students may, for instance, read Shakespeare and nineteenth-century American authors in the untranslated original. We have created cross-listed classes such as "Climate Change and Human Society" and "Ethics in the Development of Information Science and Technology." To foster individual growth, we have implemented a more balanced system in undergraduate teaching and crediting, giving students more autonomy in choosing majors and taking classes at different schools, levels, and disciplines according to their interest, after fulfilling designated prerequisites. And rounding off our efforts at educational reform, ShanghaiTech is now among the first Chinese universities to offer the Civilization Series (Chinese Civilization, World Civilization, and Evolution of Science and Technology) as part of the core curriculum. Chinese Civilization, for instance, is taught in our Institute of Humanities, which has hired more than forty tenure- and teaching-track professors from across the globe. In developing this cotaught course, my colleagues at the Institute have stayed away from a staid chronological approach, and have made a point to teach thematically and in English, so that the class may be taken by international students (see Table 1 for a sample syllabus).

As higher education is more than what happens within the confines of lecture halls, most of our classes now carry not only in-session discussions, but also substantial lab or practice components. In addition, one of our major initiatives is the introduction of residential colleges to the campus experience. Although, according to Pericles Lewis, "in the United States…there has been a long tradition of residential education," the residential college system has yet to see extensive adoption among Chinese institutions.[5] ShanghaiTech has put together three such colleges, each with its distinctive identity and appeal. All full-time professors participate as mentors to give students the needed extracurricular, individual support in work and life. And every undergraduate student at the university receives such mentorship. The key program that brings the three residential colleges together is the "social immersion" that facilitates the students' appreciation of what goes on outside their immediate academic and personal existence. For about two weeks, our undergrads travel and reside in the hinterland or in ethnic minority regions, getting firsthand experience of pressing issues such as ecology, cultural heritage, and educational equity, but also to benefit from such traditional counsel as "that

Table 1

Sample Syllabus for the "Chinese Civilization" Course at
ShanghaiTech University

Theme	Key Content	Theme	Key Content
Introduction	Defining key terms such as Chinese-ness and the Chinese civilization	**Theme 6:** Education	The evolution of educational insti-tutions, and the in-fluence of Civil Ser-vice Examination
Theme 1: Climate, Geography, and Boundary Changes	Ancient China and its neighbors: How China's interactions with the "others" (re-)shaped the Chinese civilization	**Theme 7:** China and the World	The *tianxia* (all-under-heaven) concept and the interactions be-tween China and the world
Theme 2: Political Institutions in Ancient China	Changes and con-tinuities in the Chinese political institutions	**Theme 8:** Literature and Arts in Ancient China	Themes in Chinese literature
Theme 3: Chinese Philosophies	Themes in Chinese philosophies	**Theme 9:** Technology and Science in China	Science and the differences be-tween science and technology in Chinese history
	Buddhism and its impact on Chinese culture, society, social values, philos-ophies, and politics		
Theme 4: Social and Institutional History	Women and gender in Chinese history	**Theme 10:** The Arts and Theatre	Music, drama, painting, calligra-phy, and philoso-phies of art
Theme 5: Economic Institutions and Developments	The theory of Great Divergence and its revisions	**Theme 11:** Everyday Life of the Chinese people	Popular religions, social practices, and folklore

Source: Author's compilation of data from ShanghaiTech University.

which is of no immediate use often sees wider use."[6] Mentorship regarding student entrepreneurial explorations is also provided. In short, at ShanghaiTech, my colleagues and I embrace the conviction that working through diverse value systems, cultural perspectives, and social practices activates rather than dampens students' creative and critical spirit. It helps them know the country and their world better, and themselves too.

Over the millennia of human growth, nations and ethnic groups gave birth to local civilizations with particular characters and distinctions, and together they also created the global human civilization in all its splendid richness and diversity. It is by the strength of this global vision that our college students are making discoveries about common values and participating in the creation of a shared human destiny. Technological advances, such as artificial intelligence, will no doubt transform the makeup of the human enterprise by drastically modifying, if not totally replacing, our physical and mental access to the goals we want to accomplish. What is to become the next chapter of this ancient and young civilization of ours? The wisdoms yielded by humanist achievements so far certainly keep us grounded regarding a future of gripping uncertainties. Meanwhile, the humanist curricula of today's higher education testify to the enduring power of human creativity.

ABOUT THE AUTHOR

Mianheng Jiang is the Founding President of ShanghaiTech University. He served as Vice President of the Chinese Academy of Sciences from 1999 to 2011. He is the elder son of Jiang Zemin, former president of the People's Republic of China.

ENDNOTES

1 Isak Frumin and Daria Platonova, "The Socialist Model of Higher Education : The Dream Faces Reality," *Dædalus* 153 (2) (Spring 2024): 178–193, https://www.amacad.org/publication/socialist-model-higher-education-dream-faces-reality. In Wen-hsin Yeh's account, the upgrading of human resources remained a major concern for Chinese higher education even in the early Reform episode. See Wen-hsin Yeh, "Chinese Universities on the Global Stage : Perspectives from the Recent Past," *Dædalus* 153 (2) (Spring 2024): 83–97, https://www.amacad.org/publication/chinese-universities-global-stage-perspectives-recent-past.

2 "Reform and Opening Up" is a term used in China to describe the Chinese economic reform in the late twentieth century, influenced by socialism, which began after Mao Zedong's death in 1976.

3 Teri A. Cannon and Stephen M. Kosslyn, "Minerva : The Intentional University," *Dædalus* 153 (2) (Spring 2024): 275–285, https ://www.amacad.org/publication/minerva-intent ional-university.

4 Internationalization, or the international aspect, of modern higher education seems to have formed a particularly resonant theme in this volume, in part because of William C. Kirby's monumental research that sets the context for featured discussions. In my personal investigation on the issue, the essays by Marwan M. Kraidy, Emily Levine, Richard C. Levin, Takehiko Kariya, and Mariët Westermann have been extremely helpful. See Marwan M. Kraidy, "Northwestern University in Qatar : A Distinctive Global University," *Dædalus* 153 (2) (Spring 2024): 63–67, https ://www.amacad.org/pub lication/northwestern-university-qatar-distinctive-global-university ; Emily J. Levine, "Research & Teach-ing : Lasting Union or House Divided ?" *Dædalus* 153 (2) (Spring 2024): 21–35, https ://www.amacad.org/publication/research-teaching-lasting-union -or-house-divided ; Richard C. Levin, "Online Learning & the Transformation of Global Higher Education," *Dædalus* 153 (2) (Spring 2024): 262–274, https ://www.amacad.org /publication/online-learning-transformation-global-higher-education ; Takehiko Kariya, "A Long & Wrong Road to Globalization : Why Have Japanese Universities Failed in 'Catching Up' in the Twenty-First Century ?" *Dædalus* 153 (2) (Spring 2024): 120–135, https ://www.amacad.org/publication/long-wrong-road-globalization-why-have -japanese-universities-failed-catching-twenty ; and Mariët Westermann, "The International University in an Age of Deglobalization," *Dædalus* 153 (2) (Spring 2024): 36–47, https ://www.amacad.org/publication/international-university-age-deglobalization.

5 Pericles Lewis, "The Rise & Restructuring of Yale-NUS College : An International Liberal Arts Partnership in Singapore," *Dædalus* 153 (2) (Spring 2024): 48–62, https :// www.amacad.org/publication/rise-and-restructuring-yale-nus-college-international -liberal-arts-partnership.

6 This is an alternative rendition of an exhortation by Chuang Tzŭ, an ancient Chinese philosopher, to "know the use of useless things." Chuang Tzŭ, *Chuang Tzŭ : Mystic, Moralist and Social Reformer*, trans. Herbert A. Giles (London : Bernard Quaritch, 1889), 55.