AY2025-2026

Programme Structure and Curriculum

Period	Course Type	No. of AU
Trimester 2	Core Courses	6
	Electives*	3 or 6
Trimester 3	Core Courses	7
	Electives*	3 or 6
Trimester 1	Core Courses	8
Total		**30**

*Students need to complete any 9AU of electives

AY25 Trimester 2 (CORE)

Course Code	Course Overview
BS6501 **Essentials in BioBusiness and BioEntrepreneurship** **2AU**	This course provides a comprehensive overview of the key life cycle stages of a biobusiness, encompassing: • Pre-company preparation (ideation, opportunity identification, bioentrepreneurs, IP basics, legal basics, business contract basics) • Company formation (registration, constitution, shareholder agreements, share option and vesting, IP strategy, legal structure, initial funding) • Early-stage operations (team building, product development, regulatory planning, seed financing) • Middle-stage growth (clinical validation and other regulatory approval, operation management, business development, series A/B/C fund raising, company valuation) • Late-stage scaling and exit strategies (strategic partnerships, IPO, M&A, global expansion) Through a combination of lectures, real-world case studies, scenario-based group discussions, and presentations, students will gain a practical and strategic understanding of the dynamics of launching and growing a biobusiness. Key themes explored include: • Innovation pathways and commercialization in biotechnology and healthcare • Entrepreneurial mindset and leadership in bioscience ventures • Business model development and competitive positioning • Financial planning and investment strategies specific to biobusinesses • Regulatory frameworks and market access strategies (e.g., FDA, EMA, HSA) • Strategic alliances, intellectual property, and deal-making in the biotech industry
BS6502 **Regulatory Affairs in Biobusiness** **2AU**	This 12-week programme provides a complete and concise treatment of the key considerations in the development and regulation of healthcare products. The course covers both regulations of human drugs and medical devices. The course begins with a historical introduction to the healthcare products industry and the start of regulatory controls. It then moves into the core principles of healthcare product regulations and expands into the methodologies of ensuring compliance with

	regulatory requirements. This includes going through the fundamentals of Good Manufacturing Practices, quality management systems, product risk classification, risk management, and the different regulatory systems in the world. At the end of this course, students should have a clear understanding of healthcare product regulations and able to apply these requirements in product development. Students will also be required to perform casework to test their ability to apply these concepts in real scenarios.
BS6503 **Intellectual Property Rights Related to BioBusiness** **2AU**	This course aims to provide an introduction to intellectual property, in particular, those that are related to BioBusiness, including patents, trademarks, and trade secrets. It also aims to cover aspects of Patenting in greater detail, e.g. the rules of a patent, how to apply for a patent, what is the timeline of the patent, how to search into patent database or how to make profit or market your invention, will be covered. The course will further expose you to other tools like freedom to operate and licensing, compare the legislative differences with respect to Intellectual Property in different regions of the world, and facilitate you to consider the implications of these in terms of practice through association with other courses where Intellectual Property Rights need to be considered.

AY25 Trimester 2 (ELECTIVE)

Course Code	Course Overview
BS6216 **Research and Development of Modern Biopharmaceutics** **3AU**	This course is the specialization electives for the Biotechnology track. In this specialization-track biotech R&D overview course, we aim to cover the general topics related to modern biotech, the general categories of biopharmaceutics, the strategies used in identifying biomolecules with desirable therapeutic effects and how industry optimize and evaluate the hits. During this course, through format like Quiz, presentations and final exam assay questions, students are expected to apply learnt biological knowledge into evaluating hypothetical and real-life pharmaceutical development projects and provide technical feasibility analysis. 1/3 of the course is conducted in Technology-Enhanced Learning format, which involves multimedia presentations, on-site Quiz with immediate feedback, etc. Together with one of our course instructors, Dr. Ignacio Asial (industry instructor), who is the co-founder of local biotech, BS6216 would have extensive coverage of current industrial trends and technologies.
BS6217 **Advanced Synthetic Biology** **3AU**	This course is the specialization electives for the Biotechnology track and will introduce traditional biological systems in combination with bioengineering approaches and synthetic designs for various applications in diverse fields. A number of state-of-the-art experimental and computational enabling tools for advanced synthetic biology will be introduced. In particular, how to make these biological designs in a concept of synthetic biology will be the core content. The course is conducted in Technology-Enhanced Learning format, which involves multimedia presentations, Quizzes, videos/short movies. Industries relevant to fermentation/bioreactor, water treatment, waste food treatment etc. (like Anaergia Singapore) are planned to be involved. We will have invited speakers from the company as well as students will be visiting on site.

*Students can choose any 1 or 2 electives.

AY25 Trimester 3 (CORE)

Course Code	Course Overview
BS6504 **Basic Accounting, Finance and Marketing** **3AU**	This course provides a foundational understanding of accounting, finance, and marketing principles tailored to the bio-business sector, including agrifood, biotechnology, pharmaceuticals, and healthcare industries. Students will explore key accounting, financial and marketing concepts critical for managing and growing businesses in this specialized field. The accounting module covers accounting concepts, fundamentals of financial statements, cost and management accounting, budgeting, and compliance with regulatory accounting standards specific to life sciences. The financial module delves into corporate finance principles, investment strategies, venture capital funding, risk management, and valuation of bio-businesses. The marketing module introduces essential marketing strategies, consumer behaviour analysis, regulatory and ethical considerations, and digital branding for bio-businesses. Through real-world case studies, learning industry applications, and interactive discussions, students will develop skills in 1) Interpreting financial data; 2) financial planning for a bio-business; 3) creating marketing strategies, and 4) making informed business decisions. This core course is ideal for individuals aiming to build a career in bio-business, biotech entrepreneurship or healthcare management.
BS6506 **Handling Data for Biomedical and Healthcare business** **2AU**	This course introduces you to the fundamentals of data handling within the biomedical and healthcare business sectors. You will learn about data collection methods, regulatory frameworks like Singapore's PDPA and Human Biomedical Research Act, as well as international laws such as the GDPR. Designed for students in the MSc in BioBusiness and BioEntrepreneurship programme, this course is ideal if you're preparing for a career in healthcare, biotech, or related industries where managing data responsibly is essential. By gaining a broad understanding of data governance, privacy, and emerging trends like big data and genomics, you'll be well-equipped to navigate the complex and evolving data landscape of the biomedical world.
BS6508 **Fund Raising and Risk Management in BioBusiness** **2AU**	This module aims to provide students with a comprehensive understanding of financial ecosystem of the biotech and pharma industry. Financial drivers of the biotech and pharma industry will be discussed and how scientific and management innovation impact these. Emphasis will be given in this framework to the financing biotech projects and companies and investor exist strategies. Securing funding for biobusiness ventures, covering a range of strategies including grants, venture capital, angel investment, and public funding will be presented with practical aspects. Students will learn to identify and evaluate different sources of capital, understand investor expectations, and navigate the due diligence process. The module also focuses on developing the ability to assess and manage technical, financial, regulatory, commercial risks throughout the product development and commercialization lifecycle. By exploring real-world case studies and current industry practices, students will gain practical skills in preparing investor pitches, designing risk management plans, and responding to the unique challenges faced by biotechnology, medical device, and digital health startups. Ultimately, the module prepares students to confidently engage with stakeholders, make informed decisions, and contribute to the sustainable financial growth of biobusiness enterprises.

AY25 Trimester 3 (ELECTIVE)

Course Code	Course Overview
BS6511 **Current topics in Food Biotechnology and Sustainability** **3AU**	Current Topics in Food Biotech and Sustainability explores the cutting-edge developments, challenges, and opportunities at the intersection of biotechnology, food systems, and environmental sustainability. Students will gain a comprehensive understanding of how biotechnological innovations are transforming agriculture, food, fiber and edible oil production toward a more resilient, ethical, healthier and sustainable future and the many business opportunities along the way. Through lectures, case studies, expert talks, and group projects, this course equips students with technical knowledge and the ability to critically analyze current issues, including climate-smart agriculture, sustainable proteins, circular food economies, food waste mitigation, edible oil/biofuel/bioenergy, and sustainable fiber production. This course is designed for students interested in applying biotech solutions to address pressing global food and sustainability issues.
BS6512 **Current Topics in Translational and Digital Biomedicine** **3AU**	This course provides a comprehensive introduction to the evolving landscape of biomedicine. The core aim of this course is to equip students with the ability to critically analyze the evolution of biomedicine and digital transformation. Students will learn to evaluate therapeutic shifts—from small molecules to advanced biomolecules, biostructures, and living cells—and understand the technical and regulatory constraints of each. By integrating knowledge of AI and automation, the course prepares students to assess the commercial impact of these technologies and apply cross-disciplinary, data-driven approaches to help drive the global transition from reactive disease treatment toward proactive health and prevention. The curriculum emphasizes cross-disciplinary integration and data-driven approaches, preparing students to align with the global transition from disease treatment toward prevention and lifelong health.

*Students can choose any 1 or 2 electives.

AY26 Trimester 1

Course Code	Course Overview
BS6505 **Story-telling with Graphics and Visualizations** **2AU**	You will learn about the five facets of graph literacy stemming from analytical thinking to computational. You will also learn some professional guidelines on how to enhance your graphics for communication purposes. This is a Technology-Enhanced Learning (TEL) course (100%). *(Please note that course content is still being finalized and may be updated.)*
BS6507 **Biobusiness Product Development and Market** **2AU**	By the end of this module, students will be able to: • Summarize the essential stages of the pharmaceutical product lifecycle. • Assess the commercial feasibility of biological innovations using standard industry frameworks. • Explain how clinical data serves as the primary driver of business value. • Differentiate between patent-based protection and FDA-granted Regulatory Market Exclusivity. • Evaluate market access challenges, including pricing and payer requirements.

	• Outline lifecycle strategies to optimize product longevity and sustained growth using Real-World Evidence (RWE).
BS6531 Capstone Project **4AU**	*Please note that course content is still being finalized and may be updated.*

Click here to view the full course content and structure. Please note that the link is accessible only to NTU students.

Information is accurate at the time of publication. The University reserves all rights to make changes to the programme structure with prior notice.