COURSE CATALOG

The Thales College undergraduate curriculum equips students to be continuous learners throughout life and teaches students the technical skills and professional knowledge needed to succeed in their future careers.

Students take Liberal Arts courses and the courses required by their professional major in a prearranged order. Knowing which courses students will take in a given term enables instructors to connect themes between courses, interlinking broader ideas and preparing students for courses to come in subsequent terms. As a result, our students acquire a rich, integrated education.

The course descriptions listed here illustrate these connections, occasionally identifying relevant material from other courses. 100 level courses are taken in Terms 1–2, 200 courses in Terms 3–4, 300 level courses in Terms 5–6, and 400 level courses in Terms 7–8 (7–10 for engineering majors). The Course of Study outlines, available online, identify the order of courses taken in each term.

BUS 100 THE MINDSET OF ENTREPRENEURIAL MASTERS

This course offers an in-depth look at the entrepreneurial mindset through stories of well-known companies and the master entrepreneurs behind them. Students learn the characteristics of successful entrepreneurs; current, proven entrepreneurial concepts including kaizen and alertness; how to identify economic opportunity in ordinary settings, including businesses, non-profits, and households; and how entrepreneurs benefit society by producing valuable goods and services, generating unique solutions to problems and providing meaningful work, opportunity for high achievement, and philanthropy.

BUS 140 ACCOUNTING I

This course introduces the basic principles of accounting. Students will learn a brief history of accounting during the medieval and modern eras and a broad overview of various accounting systems. They will know how to use and analyze accounting data, how to interpret and construct financial accounting statements, and what constitute sound, prudent financial accounting practices.

BUS 160 ACCOUNTING II

This course builds on the basic principles and concepts covered in Accounting I and teaches students the accounting methods used by different kinds of businesses to record, analyze, and classify financial transactions.

BUS 180 PHILOSOPHY OF BUSINESS AND EFFECTIVE MANAGEMENT

The course begins with a philosophy of business based on the fundamental goods of dignified work, production and trade, the essential role of the enterprise to organize these goods, and the vocation to business of those committed to perform this work with integrity. Students learn business theory and practice by acquiring and applying the concepts and wisdom of master business thinkers, including Peter Drucker, Ken Iverson, and Masaaki Imai. Topics include disruptive innovation and management; corporate principles, culture, and governance; managerial information processing and decision making, leadership and ethics; business operations, performance & continuous improvement; goal-setting, incentives, communication and productivity; interpersonal skills, teamwork and group dynamics; conflict and negotiation; and management development.

BUS 220 FINANCIAL MODELING IN EXCEL

Drawing upon prior liberal arts and entrepreneurial business coursework, students will use financial modeling to address topics in the human dynamics of risk, return, predictive scenarios, decision making, personal finance and life-long investment, business management and economics.

BUS 240 CORPORATE FINANCE

This course teaches the theory, methods, concepts and skills of finance and places them in a human context by relating them to prior and concurrent Thales College philosophy, economics, and entrepreneurship courses. Main concepts include the time value of money, value and capital budgeting, risk and return, market efficiency, real-world applications, capital structure and payout patterns. Faculty mentors help students integrate their use of technical skills with teamwork, non-technical communication, and ethical integrity.

BUS 260 INVESTMENTS

This course teaches theory and practice of investment in firms, including the types of investments and markets, analysis and interpretation of financial data, concepts of asset allocation and diversification, portfolio theory and practice, equilibrium in capital markets, fixed income securities, security analysis, and behavioral finance. Faculty mentors help students use their technical skills according to the principle that to be an investor means to invest in people, their productive work, and products and services of true human benefit.

BUS 320 INTERNATIONAL FINANCE

The course begins with a brief historical overview of international finance, including innovations during the Italian Renaissance. Students then learn foreign exchange market theory, current trends and future issues in global financial markets and financial management strategies to

address current challenges. They apply concepts such as exchange rate risk to hedging strategies for raising capital abroad, managing the cost of capital for international projects and managing multinational operations. Faculty mentors help students use their technical skills according to the principle that to be an investor, even in an international context means to invest in people, their productive work, and products and services of true human benefit.

BUS 340 PRODUCT DESIGN

This course examines case studies illustrating successful product design and builds the knowledge and skills necessary to participate in the product design process. Students in every professional major take this course to approximate the interdisciplinary product design experience of an actual business setting. Students apply their prior internship experiences and liberal arts instruction in mathematics, logic, and the humanities to learn design processes and evaluate product concepts in a human context.

BUS 360 MARKETING

This course, required of all professional majors, helps students relate marketing concepts to their field of professional study and to collaborate with those in other fields to market products, reflecting an actual business setting. Students draw upon prior profession-specific and liberal arts courses and their internship experiences to explore how the human quest for happiness frames study of consumer behavior, how marketers identify consumer needs, how products satisfy needs, and how to communicate product benefits effectively.

BUS 380 BUSINESS LAW & ETHICS I

This course integrates business law and ethics. Students review moral standards and ethical theories studied in prior humanities courses and apply legal concepts to illustrative cases. Topics include constitutional law, duties, contracts, torts, third party rights, intellectual property, business formation, lending, criminal law, and fraud. Students relate legal concepts to works from the humanities and internship experiences to explore the human context of legal and ethical responsibility, ethical decision making, and the virtue of justice in business relationships.

BUS 440 BUSINESS LAW & ETHICS II

This course applies the ethical and legal principles learned in BUS 375 Business Law I to small to medium sized businesses with a particular focus on entrepreneurship. Students learn the formation, operation and termination of partnerships and corporations, financing, roles of directors, officers, and shareholders, security interests in personal property, bankruptcy, agency relationships, the public regulation of business, international law, and when it is appropriate to consult an attorney. Students relate legal concepts to works from the humanities and internship experiences to explore the human context of legal and ethical responsibility, ethical decision making, and the virtue of justice in business relationships.

BUS 460 ENTREPRENEURIAL VENTURES

In this course, taken in the final term of the program, students from each professional major work together to create new products, approximating actual business activity. The course builds upon skills and knowledge acquired in Product Design, Marketing, other profession-specific courses and internships. Students integrate business theory and practice, engineering, and humanistic thinking to move from market opportunity to product design and to plan for future execution and sale. They identify opportunities, evaluate product design concepts, envision how to structure an organization for growth and plan for staffing and management.

BUS 300 INTERNSHIP

Internships help the student discern a career orientation, develop employability skills, acquire industry knowledge and apply liberal arts and professional learning to the work environment. At Thales College, multiple internships are indispensable to the Thales College experience, are expected for each student, are not awarded academic credit, and are reflected on the student's final transcript. Thales College helps students secure paid internships.

ECN 160 FOUNDATIONAL ECONOMIC CONCEPTS

Thales College considers economics to be fundamental for any educated person. The first of four required economics courses, this course introduces basic economic concepts

including value, ownership, use, trade, markets, supply & demand, prices, comparative advantage, division of labor, competition, economies of scale, and profit & loss. It applies those concepts to salient economic issues such as sustainability, unemployment, poverty, economic equality and inequality, taxes, redistribution, monopoly, regulation, fiscal policy, monetary policy, speculation, advertising, globalization, crony capitalism, and free trade vs. protectionism. Students also use economic concepts to learn about the industry in which they would like to work.

ECN 300 PHILOSOPHY OF ECONOMICS

This course examines the foundations of free market economics in classical liberal thought. The course begins with a history of economic thought and an examination of concepts such as spontaneous order, self-interest, civil society, the rule of law, property rights, and the mutual benefit of trade. It studies the habits of mind and heart needed to operate and maintain a free economy, such as initiative, creativity, invention, risk-taking, cooperation, organization, and accountability.

ECN 360 CONTEMPORARY ECONOMIC SYSTEMS

This course reviews concepts introduced in prior economics courses and compares different economic systems, including classical liberalism, Keynesian economics, Public Choice, Socialism, and Communism. It applies this knowledge to understand currently existing national economies and globalization.

ECN 380 MICROECONOMICS AND ECONOMIC DECISION-MAKING

This course deepens knowledge concepts learned in prior economics courses, introduces specific principles of microeconomics and applies them to decision making in institutions of civil society and in households. Topics include the scarcity principle, choice, the incentive principle, opportunity costs, law of diminishing returns, marginal costs and benefits, elasticity, and supply and demand. Students use these concepts and economic data to understand decisions relating to firms and households, identify economically viable courses of action, and practice effective decision making.

HUM 100 LIFE AND CAREER DYNAMICS

Students identify three potential career plans and learn practical skills for testing, evaluating, and revising their plans. They improve their time management and prioritization skills, learn the skills of personal finance and develop the habit of managing their financial resources. They learn how studying the liberal arts deepens personal and professional values and how insights from the humanities impact priorities for life and work.

HUM 120 WRITING & RHETORIC I

Using examples from exceptional writers in the liberal arts tradition, this course fosters an appreciation of great writing and develops the student's ability in grammar, composition, rhetoric, and critical thinking. The course ends with instruction in advanced composition and rhetorical techniques applied to the classic essay and everyday forms of communication such as e-mails, memos, letters, presentations, and reports.

HUM 140 WRITING & RHETORIC II

This course builds upon the knowledge and skills acquired in HUM 120 Writing & Rhetoric I. The course studies classic examples of great writing and rhetoric and applies them to a variety of formats, including essays, research papers, reports, proposals, presentations, and business communications. Students learn to recognize when research and the documentation of sources are necessary. Course work focuses on the discernment of important matters for consideration, logical thought development, and the truthful, credible, civil and persuasive communication of arguments and outcomes.

HUM 200 LOGIC

Students study examples of sound reasoning through logic and argumentation in classic and modern texts. The course demonstrates how inductive and deductive reasoning work together to lead the mind toward sound evidence-based judgment and clear conceptualization. The course introduces the elements of logic, including sentence structure, propositional forms, the syllogism, logical fallacies, and rhetorical tricks that demonstrate the

importance of uniting logic and rhetoric. Students practice using logic to analyze problems and arguments, to construct solutions and counter-arguments, and to examine sound (and unsound) reasoning in everyday life.

HUM 220 PHILOSOPHY OF BEING HUMAN

This course introduces philosophy as the search for wisdom and raises fundamental questions about being human: Who are we? What makes us happy? What do we need in order to pursue happiness? What is good for us? What are freedom, knowledge, emotions, habit, identity, and love? What is the meaning of work? What is the meaning of the human body? How should we have good relationships? Students encounter responses from the Ancient Greek philosophers to 21st century thinkers and become well-versed in a variety of attempts to define the human being and their practical implications for how people behave and view themselves.

HUM 240 WESTERN CIVILIZATION I

Taken in successive terms, the courses Western Civilization I & II help students to understand the arc of human history and Western culture from ancient through medieval to modern eras. Western Civilization I surveys Western culture from ancient Sumer through the Middle Ages, with particular attention to historical context. The course examines some key texts of Western civilization and the cultures that these seminal texts helped to shape. Readings include selections from the Hebrew Scriptures (The Old Testament) and the New Testament, ancient Greek and Roman philosophers, dramatists, and historians, and Christian writers through the Middle Ages. Students explore fundamental questions confronting the human condition, deepen their understanding of the Western tradition, and appreciate the contributions of these writers to the world we live in today.

HUM 260 WESTERN CIVILIZATION II

Western Civilization II examines Western culture from the Renaissance to World War II, with particular attention to historical context. Beginning with the Italian Renaissance, the course traces the impact of major movements including the Protestant Reformation, the Scientific Revolution, and the Enlightenment. The course teaches Western culture via major historical events and the contributions of authors such as John Locke, James Madison, Immanuel Kant, Jean-Jacques Rousseau, Jane Austin, Karl Marx, Charles Darwin, Friedrich Nietzsche, John Henry Newman, Sigmund Freud, Simone Weil, Jean-Paul Sartre and Jacques Maritain.

HUM 280 ETHICS

This course raises the question “As human beings, how ought we to live?” and introduces the main ethical approaches of moral philosophers over the past 2500 years: Utilitarianism, Duty Ethics, Natural Law-Virtue Ethics, and Divine Command Theory. In-depth discussion of selected ethical issues and cases helps students distinguish diverse moral views in contemporary culture, evaluate their strengths and vulnerabilities, and discern a path of ethical integrity in life and work.

HUM 340 ANCIENT MASTERS

This course is the first of four Masters of Thought courses that foster deep engagement with great minds of the past, high level interpretive skills, and civil discourse and debate. In this course, students explore the ideas of the ancient Hebrews, Greeks, Romans, and Christians. Students learn to interpret ancient masters of thought by explaining key features of ancient thought and writing, including ancient worldviews, literary conventions, and social conditions. Students then explore fundamental human questions in texts from Hebrew scriptures (The Old Testament) and other ancient Near Eastern literature, Greek epic poetry and philosophy, Roman philosophy, and early Christian writings. Students will demonstrate mastery of each author’s thought through the skills of close reading, reasoned interpretation and clear oral and written communication.

HUM 360 MEDIEVAL MASTERS

This course studies the medieval development of ancient ideas and the emergence of new ways of thinking and communication in the Middle Ages. Students learn how masters of thought responded to large-scale changes in medieval society and technology. Readings may include (but are not limited to) Augustine of Hippo, Piers Plowman, Chaucer, Hildegard of Bingen, Thomas Aquinas, Christine

de Pisan, Dante, William of Ockham, and Petrarch. Students will deepen their skills of interpretation through the skills of close reading, reasoned interpretation and clear oral and written communication.

HUM 400 RENAISSANCE AND EARLY MODERN MASTERS

This course studies the continuities and pivotal shifts in thought that bridged the medieval and modern worlds and flowered in some of the greatest art and literature ever produced. Readings may include (but are not limited to) Francis Bacon, Rene Descartes, Macchiavelli, Shakespeare, Jonathan Swift, Thomas Hobbes, Algernon Sidney, and John Locke. Students will deepen their skills of argumentation through the skills of analysis, justified argument, debate and clear oral and written communication.

HUM 410 PERSUASIVE SPEAKING AND DEBATE

This advanced rhetoric, public speaking, and debate course builds upon rhetorical skills and humanistic learning acquired in prior writing and logic courses, in Socratic Seminars, and in internships. Students study classical, modern, and professional models of persuasive speaking and debate, including Patrick Henry, George Washington, Daniel Webster, Abraham Lincoln, Theodore Roosevelt, John F. Kennedy, and Ronald Reagan. Students apply their skills in debate and in professional communication and are evaluated for non-verbal communication skills, such as poise, appearance, confidence, body language, and eye contact.

HUM 430 POLITICS AND CULTURE OF A FREE SOCIETY

This course defines a free society composed of three sets of institutions--the family, civil society, and government--that participate in three social systems--economic, political, and cultural--designed to promote free association and the free exchange of property and ideas. The course builds upon prior economics, humanities, and applied mathematics courses and internship experiences to explore how a free people might form culture and conduct politics for a flourishing society. Students apply principles of political participation, such as the common good, rights and political virtues, to current issues in contemporary society, such as globalization, citizenship, the exercise of and limits to freedoms of religion, conscience, and speech, and privacy, with special attention to digital communication and social media.

HUM 440 AMERICAN HISTORY I

This course will examine the underlying political philosophy and foundational principles of the Founding Fathers, whose minds were shaped by a Christian culture and by authors of the Greco-Roman and Early Modern worlds. This course will examine how these traditions shaped the American Revolution, the U.S. Constitution, the early years of the American Republic, and challenges to America's Constitutional Framework through the American Civil War.

HUM 450 AMERICAN HISTORY II

This course continues to examine the American experiment after the Civil War through industrialization, the Progressive Era, World Wars, the Cold War and its aftermath until the current period. The course covers the events, major figures, and ideas that shaped each period.

HUM 460 MODERN MASTERS

This course studies masters of thought who have powerfully shaped modern thinking and culture. Authors may include (but are not limited to) David Hume, Montesquieu, John Keats, Mary Shelley, Fodor Dostoevsky, T.S. Eliot, Flannery O'Connor, Jacques Maritain, Cormac McCarthy, and Pope John Paul II. Students will demonstrate mastery of the readings and the skills of close reading, strong argumentation and clear communication.

HUM 480 LEADERSHIP IN A FREE SOCIETY

This course reviews briefly the composition of a free society in the family, civil society, and government and social principles such as subsidiarity, solidarity, and the common good. The course focuses on the essential habits of mind and heart needed to maintain free institutions, such as trust, respect for truth, honest, candid and respectful public discourse, integrity in business and in civil service, a sense of public spirit and volunteerism, and political virtues such as political prudence, loyal opposition, and toleration. Students draw upon prior humanities courses

and internship experience to apply these habits to the leadership of Civil Society's institutions at various levels, such as businesses and non-profit service organizations, cultural institutions such as schools and the press, political institutions such as political parties and public policy research institutes.

HUM 490 CAPSTONE

The Capstone course enables each student to integrate their liberal arts, professional studies, and internship experience into a project that highlights their talents and strengths and prepares them to meet post-graduation goals. Students work one-on-one with a faculty member and are encouraged to involve members of their professional and social networks to guide their work. Capstone projects can take various forms, including a thesis, portfolio, product development plan, audio or video production, or a website. The student will submit the capstone project in a tangible form that can be evaluated and present the work to a public audience. Required of all majors except Mechanical Engineering.

MSC 100 PRE-CALCULUS

This course is designed to prepare the math student for Calculus. Topics covered include an extensive survey of functions and graphing techniques, including in-depth analysis of polynomial, rational, exponential, logarithmic, and trigonometric functions and their properties. The course will also cover analytic trigonometry, conic sections and geometry of the coordinate plane, vector analysis, and an introduction to limits, as well as a variety of discrete math topics, such as sequences, series, and probability.

MSC 120 CALCULUS I

This course teaches the key concepts, methods, and applications of single-variable calculus including functions, graphs, limits, derivatives, and the Fundamental Theorem of Calculus. Students will become familiar with concepts, results, and problems expressed in multiple ways including graphically, numerically, analytically, and verbally. The course teaches applications of the integral, like arc length and volumes of solids with rotational symmetry and relates them to the physical sciences and engineering. Technology will be used to help solve problems, experiment, interpret results, and support conclusions.

MSC 140 PRINCIPLES OF PHYSICS/PHYSICS I

This introductory algebra-based physics course teaches introductory physics, emphasizing connections between theory and application. Topics include the nature of science and physics as one "way of knowing" among many, units and measurement, vectors, motion in one and two dimensions, Newton's laws of motion and their applications, work and energy, linear momentum and collisions, rotational motion, fluids, heat, vibrations, and principles of conservation. Physics sections for engineering majors emphasize the application of principles and methods while physics sections for non-engineering majors conclude with discussions of the implications of discoveries in physics for conducting business and for understanding the relationship between scientific, humanistic, and religious thought.

MSC 160 PHYSICS II

This course builds upon MSC 140 Physics I to prepare engineering majors for engineering courses. It covers thermodynamics, temperature and heat, kinetic theory of gases, the laws of thermodynamics and electricity and magnetism, electric charges and fields, Gauss's Law, electric potential, capacitance, current and resistance, circuits, magnetic forces and fields, and electromagnetic induction and waves.

MSC 170 PRINCIPLES OF BIOLOGY

This course first introduces core, unifying concepts in biology and chemistry and then applies them to topics in biology. As the course proceeds, it continues the discussion raised in Physics I regarding science as one necessary "way of knowing" among others and discusses the power and limitations of science to discover truths about living organisms, to generate medical technology, and to contribute to our understanding of humanity and our environment. Scientific topics may include cell ultrastructure and function, genetics and heredity, reproduction, and the diversity of organisms. Students will be prepared to use their knowledge of biology in family and social life.

MSC 180 INTRODUCTION TO PROBABILITY AND STATISTICS WITH C

This course provides an elementary introduction to applied probability and statistics using C programming language. Topics include: basic combinatorics, random variables, probability distributions, Bayesian inference, hypothesis testing, confidence intervals, and linear regression.

MSC 200 CALCULUS II

This course teaches a wide variety of applications of integration, integration techniques, L'Hopital's Rule, numerical integration, improper integrals, infinite series, Taylor series, parametric equations and polar coordinates.

MSC 220 CALCULUS III

A comprehensive treatment of vectors and differential and integral calculus of several variables. Topics include parametric equations and polar coordinates, vectors, functions of several variables, multiple integration, second-order differential equations, space curves, surfaces, vectors and analytical geometry in three dimensions, components of acceleration, functions of several variables, partial derivatives, multiple integrals, line integrals, surface integrals, Stokes' theorem, and applications.

MSC 240 DATA ANALYTICS

This course teaches basic concepts and methods in how data is collected, organized, analyzed, visualized and used ethically to understand and predict trends in society and in business, make decisions, and act constructively. Students draw from prior liberal arts and professional courses to study real world examples demonstrating how data analysis has actually been used to significantly improve society, a business, or an industry. Students plan and implement an analytics project from the beginning stages of design, through planning, development of specifications, the use of flow charts, and presentation techniques. The course develops skills in Excel, C, and at least one other software, e.g., Tableau, that are required to obtain professional certifications in these technologies.