



ESSENTIAL CONCEPTS & COMPETENCIES:

Disciplinary Frameworks for
Teaching, Learning, & Assessment

About Essential Concepts and Competencies:

Over the past two years, each of the Measuring College Learning panels has defined a set of essential concepts and competencies for undergraduate-level learning in its discipline. Essential concepts and competencies are deep understandings and complex skills that faculty believe are fundamental to the discipline, valuable to students, and worth emphasizing given limited time and resources. Essential concepts and competencies should not be seen as fixed, universal, or comprehensive. Rather, they are meant to be reasonable and productive frameworks that can orient discussions about teaching, learning, and assessment.

Students of biology

should understand...

Evolution: The diversity of life evolved over time by processes of mutation, selection, and genetic change.

Information Flow: The growth and behavior of organisms are activated through the expression of genetic information in context.

Structure and Function: Basic units of structure define the function of all living things.

Pathways and transformations of matter and energy: Biological systems grow and change by processes based upon chemical reactions and are governed by the laws of thermodynamics.

Systems: Living systems are interconnected and interacting.

Students of biology

should be able to...

Model: Construct, use, re-express, and revise models and representations of natural and designed objects, systems, phenomena, and scientific ideas in the appropriate context and in formulating their explanation.

Apply quantitative reasoning: Reason about relationships between variables (e.g., data, representations, uncertainty, samples) through the lens of ratios, rates, percentages, probability or proportional relationships when approaching or solving problems or when interpreting results or situations.

Engage in argument from evidence: Evaluate the claims, evidence and/or reasoning behind currently accepted explanations or solutions to determine the merits of arguments.

Engage in scientific inquiry and experimental design: Design experiments with appropriate strategies, controls, and alternative approaches.

Analyze and evaluate data: Extract information from data and analyze it to discover patterns, critically evaluate conclusions, and generate predictions for subsequent experiments.

Appreciate and apply the interdisciplinary nature of science: Apply concepts from within biology subdisciplines and outside of biology to interpret biological phenomena.

Students of business

should understand...

Business in Society: Business is nested or embedded in society. Rather than viewing business as a segregated activity, one in which choices can be readily justified as “just business,” this nested conception of business implies a commitment to the view that business finds its normative grounding in a broad conception of service to society.

Globalization: Globalization is the worldwide movement toward economic, financial, trade, and communications integration resulting in an interconnected and interdependent world with free transfer of capital, goods, and services across national frontiers.

Strategy: Within the global and rapidly changing business context, business leaders must quickly design and redesign strategies and determine the best way to implement those strategies, improvising and adapting as the environment continues to change.

System Dynamics: Business leaders work within complex systems. They must develop a sense of how their actions will affect those systems and be able to identify points of leverage for change in the system.

Consumers: Identifying desirable goods, services, and overall customer experiences involves discerning, analyzing, and engaging consumer needs and preferences, defining the value to be delivered or co-created, and then communicating the value of the organization's outputs to the customers.

Transparency, Disclosure, and Metrics: Business organizations must identify, measure, and allocate financial and non-financial resources.

Students of business

should be able to...

Select from and deploy diverse thinking skills: Business students must become adept at critical and analytical thinking to probe assumptions in any given schema, integrative thinking to “assess and balance conflicting ideas” and to seek “a creative resolution of the tension in the form of new models,” systemic thinking to see “how the thing being studied interacts with other constituents of the system,” and design thinking, a form of thinking that effectively integrates empathy, creativity, and rationality.

Exercise ethical judgment: While the cognitive skills necessary for ethical reasoning in business are clearly important, ethical judgment is more than an intellectual exercise. It involves a critical self-awareness, empathy for and understanding of others, and a disposition toward positive change in the world. It also requires the capacity to deliberate not simply in an ideal or static context, but in fast moving, pressured environments, subject to shifting economic, political, and technological restraints.

Demonstrate informational and technological literacy: In an age of (big) data and information, students will need the ability to understand, probe, interpret, and communicate business information using written, oral, visual, and quantitative means of doing so.

Manage people in a culturally competent manner: Achieving organizational goals entails engaging and coordinating the efforts of individuals within business enterprises. In this increasingly global business environment, learning to effectively leverage the diversity, cultural or otherwise, present on a team will be critical to the success of businesses.

Students of communication

should understand...

Social Construction: Communication, as a discipline, is predicated on the theory of knowledge that attends to jointly constructed understandings of the world. This theory holds that understanding and meaning emerge in coordination with other human beings and is dependent upon language as a fundamental system for the construction of meaningful reality.

Relationality: Communication is inherently transactional and collaborative; as a human behavior, to communicate is to engage with others, share meaning, make arguments, speak and listen, and transact together in a state of consubstantiality.

Strategy: Communication is a primarily intentional activity. It involves the capacity to read and interpret contexts and situations to readily tailor and develop messages. For centuries, scholars and teachers have theorized strategies for effective, intentional communication, and knowledge of those theories and concepts is essential.

Symbolism: Communication students study and understand the theories behind the semiotic formation of meaning; they explore the capacity of symbols to socially construct reality, form relationships, and express strategic intention.

Adaptability: Communication and communicators are adaptable. The knowledge that communication behaviors must change and the theories that explain such adaptation are fundamental to the Communication discipline.

Students of communication

should be able to...

Engage in communication inquiry: Formulate questions appropriate for Communication scholarship and engage in Communication scholarship using the research traditions of the discipline.

Create messages appropriate to the audience, purpose, and context: Locate and use information relevant to their audiences, purposes, and contexts, and select and present messages in creative and appropriate modalities and technologies to accomplish communicative goals.

Critically analyze messages: Identify meanings that are embedded in messages, articulate characteristics of mediated and non-mediated messages, recognize the influence of messages, engage in active listening, and enact mindful responses to messages.

Demonstrate self-efficacy: Articulate personal beliefs about abilities to accomplish communication goals and evaluate personal communication strengths and weaknesses.

Apply ethical communication principles and practices: Identify ethical perspectives, explain the relevance of those perspectives, and articulate the ethical dimensions of communication situations. Students should choose to communicate with ethical intention, propose solutions for (un)ethical communication, and evaluate the ethical elements of a communication situation.

Utilize communication to embrace difference: Articulate the connection between communication and culture and respect diverse perspectives and the ways they influence communication.

Influence public discourse: Frame and evaluate local, national, and/or global issues from a communication perspective and utilize communication to respond to such issues and advocate for courses of action.

Students of economics

should understand...

Individual decision-making: Individuals, households, firms, communities, countries, and other agents make decisions about how to use the resources they control, which affects their well-being and the welfare of others.

Markets and other interactions: Agents interact with each other through markets and other mechanisms, which helps to determine the production, consumption, and distribution of goods and services.

The aggregate economy: Individual decisions and interactions combine to form aggregate outcomes for an economy, which are described, predicted, and assessed in macroeconomic analyses.

Role of government and other institutions: Governments, and other organizations and institutions, can regulate or influence economic activity in ways that affect the distribution of resources, individual well-being, and social welfare.

Students of economics

should be able to...

Apply the scientific process to economic phenomena: Ask an economic question, gather information, form a hypothesis, identify data to test the hypothesis, analyze the data, and draw conclusions and suggest future research.

Analyze and evaluate behavior and outcomes using economic concepts and models: Use economic concepts and models to: predict or explain behavior and outcomes; evaluate choices made by firms, individuals, or groups, and suggest allocations that may help them better achieve their objectives; evaluate the efficiency and equity of economy-wide allocations, and suggest government policies to improve social welfare.

Use quantitative approaches in economics: Work with mathematical formalizations of economic models and perform mathematical operations; confront any observed correlation knowing it is not evidence of causation and explain why; explain the design and results of laboratory and field experiments; and, explain the conduct, results, and limitations of basic econometrics.

Think critically about economic methods and their application: Explain economic models as deliberate simplifications of reality, identify the assumptions and limitations of each model, select and connect economic models to real economic conditions, explain the strengths and limitations of economic data and statistical analyses, and think creatively and combine existing economic ideas in original ways.

Communicate economic ideas in diverse collaborations: Demonstrate fluency in economic terminology and graphical tools, demonstrate knowledge of major economic institutions and magnitudes of common economic statistics, explain economic reasoning and methods to economists and to non-economists, integrate economic insights with those from other disciplines in multidisciplinary examinations of individuals and societies, and discuss economic issues and policies in ways that promote mutual understanding and inquiry.

Students of history

should understand...

History: History is an interpretative account of the past supported by evidence that survives. History is not simply an account of “what happened”; the past cannot be known except through a disciplined process of problem solving.

The Past: The object of historical study is the past. Recognizing the “pastness of the past” directs historians to understand people of the past by contextualizing their actions: what they were trying to accomplish, the nature of their beliefs, attitudes, and knowledge, the culturally and historically situated assumptions that guided thought and action.

Historical Evidence: Historians use primary and secondary sources to make sense of the past. History students should know that primary and secondary sources come in diverse forms, represent diverse perspectives, and have distinct strengths and limitations as evidence about the past.

Complex Causality: Historians are intensely interested in the how and why of historical events. Historical accounts are multiple and layered, avoiding monocausal explanations and reductionist thinking.

Significance: Significance is the indefinite standard by which historians determine what questions are worth asking; what parts of the past are worth teaching, learning, and remembering; and which pieces of the extant past properly belong in a meaningful, coherent account.

Students of history

should be able to...

Evaluate Historical Accounts: Recognize historical explanations in their most common forms: narrative, exposition, causal model, and analogy; identify an author's interpretation and critically scrutinize the evidence and analysis used to support it; and critically evaluate, compare, and synthesize historical accounts.

Interpret Primary Sources: Distinguish primary from secondary sources; assess the credibility of sources and make judgments about their usefulness and limitations as evidence about the past; consider how the historical context in which information was originally created, accessed, and distributed affects its message; and address questions of genre, content, audience, perspective, and purpose to generate subtexts that illuminate the intentions of the author.

Apply chronological reasoning: Take account of the role of time, sequencing, and periodization in historical narratives. Contextualize: Place an event, actor, or primary source within the context of its time in order to interpret its meaning and significance.

Construct a historical argument using primary sources: Construct acceptable historical accounts that interpret the past using primary sources as evidence for knowledge claims in ways that demonstrate understanding of historical concepts, especially the nature of historical evidence, interpretation, and perspective.

Students of sociology

should understand...

The Sociological Eye: Sociology is a distinctive discipline. Students will recognize the following key theoretical frameworks and assumptions upon which the discipline is founded and differentiated from other social sciences: the founding theoretical traditions (Marx, Weber, Durkheim, Mead); a critique of rationality to explain human behavior; and how social forces affect individuals.

Social Structure: Social structure affects human action and social life at the micro, meso, and macro levels. Students will articulate the processes through which groups, formal organizations, and social networks influence human thought and action, and how hierarchy, power, and authority operate across these different contexts.

Socialization: Students will explain the relationship between the self and society, and how the self is socially constructed and maintained at multiple levels.

Stratification: Students will identify how social structures create and reproduce different forms of social inequality in human society through specific processes, and interpret empirical patterns and effects of social inequality.

Social Reproduction and Social Change: Students will comprehend how social structures reproduce themselves across generations, but also can change in cultural, social, political, and economic terms.

Students of sociology

should be able to...

Identify and apply sociological theories to understand social phenomena: Move beyond “folk” explanations of social phenomena and invoke evidence-based theories of sociological phenomena. Employ the sociological imagination to analyze social problems in context, and to generate and evaluate solutions.

Critically evaluate explanations of human behavior and social phenomena: Identify and appraise basic assumptions underlying multiple theoretical perspectives; deductively derive theories from assumptions; inductively reason from evidence to theoretical conclusions; and effectively use sociological theories and evidence to suggest real-world solutions to social problems.

Apply scientific principles to understand the social world: Articulate the effective use of evidence; generate research questions and/or hypotheses from sociological theories and concepts; and identify the limits of the scientific method in understanding social behavior.

Evaluate the quality of social scientific data: Identify the characteristics of high quality data in sociological research, and evaluate multiple representations of data in public discourse.

Rigorously analyze social scientific data: Articulate and apply disciplinary standards for both the qualitative and quantitative analyses of data.

Use sociological knowledge to inform policy debates and promote public understanding: Use sociological knowledge and skills to engage with and change the world around them. This includes expressing sociological ideas in a clear and coherent manner in written and oral communication; demonstrating informational, technological, and quantitative literacy; and understanding the value that sociological knowledge and skills have for life, work, and citizenship.