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## **A Brief Guide on Course Goals and Intended Learning Outcomes for The New GE Program**

Course goals are overarching statements and may or may not be readily measurable. They are related to and help guide the learning outcomes. Course goals and learning outcomes should align with and support UM graduation attributes, the GE area description<sup>1</sup> and be easily understood by students and the colleagues.

Generally, there are 4-6 intended learning outcomes for a course. Learning outcomes should start with the phrase “Student will be able to” followed by a measurable verb. One good source for these verbs is from Bloom’s taxonomy, see Table<sup>1</sup> below. Generally, verbs such as know, develop, appreciate are usually avoided since it difficult to easily directly measure these traits.

You may want to review the attached hand-out on writing LOs.

### **An Example from a GE Microbiology course**

#### **Course Goals:**

1. CG-1 To enable students to understand how knowledge is acquired and constructed in the sciences.
2. CG-2 To provide a framework for understanding how science and microbiology impacts life and society.
3. CG-3 To foster the ability to read and assess science information from the Internet, books, the popular press, journals, and other sources.
4. CG-4 To help students understand how science is a part of everyday existence.
5. CG-5 To help student see and appreciate the cultural and social dimensions of science.

#### **Course Learning Outcomes**

1. ILO-1 Students will be able **to describe** the basic principles, concepts, theories, and language that constitute the discipline of microbiology.
2. ILO-2 Students will be able **to articulate** how microbiology impacts life and society.
3. ILO-3 Students will be able **to critically read and evaluate** biological and microbiology information from books, the popular press, journals, and other sources.
4. ILO-4 Students will be able **to describe** how science is a part of everyday life with examples.
5. ILO-5 Students will be **able to identify and describe** the cultural and social dimensions of science using real world examples.

## BLOOM'S COGNITIVE TAXONOMY

Blooms Level	Outcome Verbs	Assessment Questions	Instructional Strategies
<b>Remember</b>	<u>RECALL INFORMATION</u> Count, Choose, Define, Describe, Draw, Find, Identify, Label, List, Match, Name, Quote, Recall, Recite, Sequence, Tell, Write, Reproduce, Select, State	What Does It Mean...? What Is The Best One? When...? Which One...? Who/What Is...? Define... Identify... List... Name...	Focused Listing Minute Paper Mnemonics Rehearsal Rote Memorization
<b>Understand</b>	<u>EXPLAIN IDEA OR CONCEPTS</u> Conclude, Convert, Demonstrate, Discuss, Explain, Estimate, Generalize, Identify, Illustrate, Interpret, Paraphrase, Report, Restate, Review, Summarize, Translate, Tell	How Will You Illustrate...? Which One Is True? ___ Is The Same As ___ Write In Your Own Words...? Draw A Graph. Explain... Give An Example... Interpret The Results Of... Match The Following...	Emphasize Connections And Concepts· Dual Entry Journal· Give Key Examples Graphic· Organizers· Muddiest Point· Paraphrase· Peer-teaching· Summarize· Use Metaphors
<b>Apply</b>	<u>USE INFORMATION IN ANOTHER SITUATION</u> Act, Apply, Assess, Change, Compute, Demonstrate, Determine, Develop, Draw, Imitate, Implement, Include, Inform, Instruct, Interview, Prepare, Produce, Relate, Select, Show, Solve, Transfer, Use, Utilize	Apply...? Identify The Result Of...? Which Is The Best Answer/solution? Calculate... Complete The Following... Determine... Solve...	Algorithms Authentic Problem Solving Case Studies "Coached" Practice Games Role Play Simulations
<b>Analyze</b>	<u>BREAK INFORMATION INTO PARTS</u> Analyze, Break Down, Characterize, Classify, Compare, Contrast, Correlate, Debate, Deduce, Diagram, Differentiate, Discriminate, Distinguish, Examine, Illustrate, Infer, Outline, Relate, Research, Separate, Subdivide	What Are The Different Parts Of...? What Are The Possible Outcomes...? What Is The Relationship Between...? Compare The Different Components Of... Point Out Some Problems With...	Debates Decision-making Activities Discussions Hypothetical Scenarios Just-in-Time-Teaching (JiTT) Practice By Doing Send-a-problem
<b>Evaluate</b>	<u>JUSTIFY A DECISION OR COURSE OF ACTION</u> Appraise, Argue, Assess, Choose, Compare& Contrast, Conclude, Critique, Decide, Defend, Evaluate, Interpret, Judge, Justify, Predict, Prioritize, Prove, Rank, Rate, Reframe, Select, Support	Which Of The Following Will Be Best To...? What Outcome Do You Predict Will Occur...? Why Did You Choose This Option? What Is Your Conclusion...? Recommend...	Challenging Assumptions Critiquing Articles Or Literature Discussions Debates Decision-making Activities Modeling Pros And Cons
<b>Create</b>	<u>GENERATE NEW IDEA OR PRODUCT</u> Adapt, Collaborate, Combine, Compile, Compose, Construct, Create, Design, Develop, Devise, Initiate, Integrate, Invent, Formulate, Generate, Make, Modify, Organize, Perform, Plan, Produce, Propose, Rewrite, Progress, Reorganize, Revise	How Else Can You Solve This Problem? How Would You Adapt__ To This (New Setting)? How Would You Change This Hypothesis? Given These Facts, Formulate A Response/answer... Propose An Alternative Solution...	Challenging Assumptions Constructing Wikis& Blogs Cooperative Learning Activities· Debates Discussion Role Play Writing Assignments

**References:** Anderson, L.W. & Krathwohl, D.R. (2001). A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives. New York: Longman.  
 Angelo, T.A., & Cross, K.P. (1993). Classroom assessment techniques: A handbook for college teachers (2<sup>nd</sup> ed). San Francisco: Jossey-Bass Publishers.  
 Barkley, E.F., Cross, K.P., & Major, C.H. (2005). Collaborative learning techniques: A handbook for college faculty. San Francisco: Jossey-Bass Publishers.

## <sup>2</sup> Area Course Descriptions for the New GE Programme

### **Area: Society and Behaviour**

The area of Society and Behaviour enhances students' understanding of the theories and methods of the social sciences and behavioural sciences. The area includes courses which are offered by departments and programs in the social sciences, business, education and law. This multidisciplinary approach aims to equip students with the intellectual abilities to analyze issues and values of modern society, and to draw on the tools of the social and behavioral sciences to critically engage with everyday social life. Courses in this area also enhance students' communication and personal development skills. This area prepares students to make informed judgments, perform critical reasoning, and ultimately to be productive citizens.

### **Area: Global Awareness**

The area of Global Awareness enhances students' understanding of human societies from a global perspective. The area includes courses drawn from the social sciences, humanities, business, education, and law. The courses in this area are designed to equip students with the knowledge necessary to engage with global issues, understand the function of international organizations, and to analyze global power from historical and multidisciplinary angles. The aim of each course is to prepare students to be knowledgeable and productive global citizens.

### **Area: Literature & Humanities**

Courses offered in this area invite students to explore what it means to be human with reference to a range of texts and modalities. Students are offered a range of courses that discuss different kinds of text critically, often from a cross-cultural or inter-cultural perspective. They can also participate in discussions and activities in domains such as aesthetics, creative arts, performing arts, literatures of different languages and cultures, and different cultural expressions of religion, spirituality, philosophy, ethics and memory.

### **Area: Science and Technology**

Science provides an understanding of all natural phenomena, while technology utilizes them for human benefit. In today's world, students should be aware of the meaning and methods of science and technology, and how they shape the world around us. Courses in this area aim to acquaint students with scientific thought, observation, and experimentation so as to appreciate the impact of science and technology on the planet and human life. These courses will also help promote students' interest, competence, and commitment to continued learning about contemporary science and technology. Upon completion of these courses, students are expected to understand the sequential nature of science and technology, to recognize and appreciate scientific or technological developments, to develop scientific thinking and methods for solving problems in our daily life, and to understand and communicate how technology facilitates the process of discovery in science and related disciplines.