

## Module Descriptor

<b>Module Code and Title</b>	: GSE101 Analytical Skills
<b>Programme</b>	: University-wide module
<b>Credit</b>	: 12
<b>Module Tutors</b>	: Shad Ahmed Khan, Prankaul Kumar, Karma Yezer
<b>Module Coordinator</b>	: Karma Yezer

### General Objective

The module aims at developing critical and analytical thinking skills of students to enhance their creativity and ability to think laterally that will aid problem solving and decision making abilities. With these essential analytical thinking and problem solving skills students gain an edge in a competitive world.

### Learning outcomes

On completion of the module, students will be able to:

- articulate thinking paradigms;
- explain creativity and barriers to creative thinking;
- apply creative thinking skills to spot unnoticed opportunities;
- describe problem solving process;
- apply appropriate problem solving tools to a given issue;
- evaluate issues to make informed decisions;
- generate creative solutions by using appropriate methods.

### Teaching and learning approaches

Approach	Hours per week	Total Credit Hours
Lectures	1	15
Group and Panel Discussions, Presentations, Case Study	1	15
Role Plays/Demonstrations, Mock sessions, Audio visuals	2	30
Independent Study, Reflection, Written Assignments, Project Work , Individual Reading	4	60
<b>Total</b>		<b>120</b>

### Assessment approach

#### A. Written Assignment: Portion of final Marks-20%

Students will be required to complete one written assignment on the contemporary issue of a subject. The required data and contextual information will be provided to students. Students will be required to read, analyse and interpret the data and contextual information, and communicate the result to the intended audience. Wherever there is a

need, students should substantiate the existing data with their own data collection. The length of the assignment should be anywhere between 1000 and 1500 words.

**Criteria:**

- 4%-Originality and creativity
- 2% -Clarity of the points and opinions
- 4% -Reliability of data and accuracy of data interpretation
- 8%- Analysis of the issue
- 2% -Overall effectiveness of writing style

**B. Class Participation: Portion of the final Marks-10%**

Students will participate in class discussions, contributing their ideas and opinions about the methods and tools being taught in the module.

**Criteria:**

- 2%-frequency of participation in class
- 3%-quality of comments –involving critical thinking and analysis of information and reasoning
- 5%-contribution in a group discussion in class –understanding of group dynamics and processes

**C. Case Analysis and Presentation: Portion of Final Marks-30%**

Students will solve one case study in a group which will be assessed in two components. The case can be related to any field of knowledge such as engineering, climate change, biotechnology, sustainable development, procurement, production, marketing, strategic management, human resource and current economic and social development.

**1. Written**

**Criteria:**

- 5% identifying the problem
- 10% choosing the right approach for the analysis and solving the problem
- 5% drawing the correct conclusion with a recommendation

**2. Presentation**

**Criteria:**

- 2% Creativity in delivery of the presentations;
- 2% Visual appeal
- 2% Confidence
- 4% Content analysis

**D. Panel Discussion: Portion of Final Mark-20%**

A group of students will be required to discuss a topical issue such as climate change, green procurement, disruptive innovation, and big data moderated by a peer.

**Criteria:**

- 5% Preparedness on the topic
- 5% Relevance of the argument
- 5% Respect for other panelist views
- 5% Coherent and logical flow of ideas

### E. Debate: Portion of the Final Mark-20%

Students in groups of four or five will debate on a given topic against another group.

**Criteria:**

5%-Language Proficiency

5%-Intelligence, ability and competence

5%-Logical thinking and reasoning

5%-Ability to use appropriate information

Overview of the assessment approaches and weighting

Areas of Assignment	Quantity	Weighting
A. Written Assignment	1	20%
B. Class Participation	NA (non-definite/should participate in the class discussion at least 5 times)	10%
C. Case Analysis & Presentation	1 + 1	30%
D. Panel Discussion	1	20%
E. Debate	1	20%
<b>TOTAL</b>		<b>100%</b>

**Pre-requisite:** None

### Subject matter

#### UNIT I: Thinking process & Reflection

- 1.1. Introduction to the Thinking Process & Reflection
- 1.2. Concept of mind mapping
- 1.3. Metacognition and thinking about thinking
- 1.4. Thinking Paradigms: Lateral and Vertical thinking
  - 1.4.1. Whole brain (system 1 and system 2)
  - 1.4.2. Analytical
  - 1.4.3. Critical
  - 1.4.4. Creative
  - 1.4.5. Logical
  - 1.4.6. Scientific
  - 1.4.7. Statistical
  - 1.4.8. Systems
  - 1.4.9. Visual
  - 1.4.10. Ethical

#### UNIT II: Overview of analytical thinking skills

- 2.1. Concept of analytical skills
- 2.2. Competencies of analytical thinking

- 2.3. Benefits of analytical thinking
- 2.4. Analytical thinking process
- 2.5. Tools and techniques for analytical skills
- 2.6. Application of analytical thinking
- 2.7. Validity and strength in arguments

### **UNIT III: Creative Thinking**

- 3.1. Definition of creativity
- 3.2. Creative thinking – Self-Assessment
- 3.3. Characteristics of a creative person,
- 3.4. Barriers to creativity and overcoming the barriers
- 3.5. Ways to enhance creative thinking (e.g. brain storming)
- 3.6. Methods of creativity

### **UNIT IV: Problem solving process**

- 4.1 Understanding problem analysis
- 4.2 Conventional problem solving process
  - 4.2.1 Present the problems
  - 4.2.2 Ask solutions
  - 4.2.3 Shoot down ideas
  - 4.2.4 Make consensus
- 4.3 Creative problem solving process
  - 4.3.1 Problem definition
  - 4.3.2 Problem analysis
  - 4.3.3 Generating possible solutions
    - 4.3.3.1 Brain storming process and rules
    - 4.3.3.2 Fishbone Analysis
    - 4.3.3.3 Mind mapping
  - 4.3.4 Analysing the solutions
  - 4.3.5 Selecting the best solution
  - 4.3.6 Implementing the best solution
  - 4.3.7 Planning the next course of action
- 4.4 Questioning techniques

### **UNIT V: Decision making process**

- 5.1. Introduction to Decision making process
- 5.2. Six Thinking Hats
- 5.3. SWOT Analysis
- 5.4. Decision Tree analysis/what-if analysis
- 5.5. Pareto chart
- 5.6. Logical Framework Analysis

### **Reading List**

#### **Essential Reading**

Bano, E. d. (2000). *Six Thinking Hats* (2nd ed.). New Delhi, India: Penguin India.

Michalko, M. (2006). *Thinkertoys: A handbook of creative-thinking techniques* (2nd ed.). Ten Speed Press.

Puccio, G.J., Mance, M. & Switalski, L.B. (2017). *Creativity Rising Creative Thinking and Creative Problem Solving in the 21st Century*. ICSC Press, International Center for Creativity, US

Treffinger, D. J. (2006). *Creative Problem Solving: An introduction* (4th ed.). Prufrock.

### **Additional Reading**

Bano, E. d. (2008). *Creativity workout: 62 exercises to unlock your most creative ideas*. Ulysses Press.

Bano, E. d. (2009). *Lateral Thinking*. e-Penguin.

Bono, E. d. (2005). *Thinking course (Revised Edition)*. Bernes and Nobel

Chopra, R. (n.d.). *Logical Critical Analytical Reasoning*. Galgoba Publications Pvt Ltd.

Eiffert, S. D. (1999). *Cross-train your brain: a mental fitness program for maximizing creativity and achieving success*. Amacom.

Kahneman, D. (2015). *Thinking fast and slow*. New York: Farrar, Straus and Giroux.

Scott, J. W. (2016). *Critical Thinking: Proven strategies for improving your decision making skills, retaining information longer and analyzing situations with simple logic ---- Logical thinking and critical thinking skills*. New Familiar Publishing.

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