# AUDIT COURSE: Critical Thinking

**Course Name:** Critical Thinking

**Teaching Scheme:**

- Classroom based interactive lectures and solving puzzles

**Course Objective:**

- Critical thinking is considered among the most important "higher order cognitive skills" expected from students graduating with professional degrees (e.g. engineering, management, etc.)
- This course will make you a better thinker, it will sharpen your mind, clarify your thoughts, and help you make smarter decisions (especially about your career). It will help you argue assertively and hence make you a forceful communicator – both in public speaking and in one-on-one situations.
- Most employers complain that fresh graduates need too much of direction and they are incapable of "independent decision making". We intend to overcome this shortcoming

**Course Outcome:**

- If students whole-heartedly participate in the course, they can expect to be smarter, stronger and more confident thinkers.
- They can embark on a life-long journey of "self-directed learning".

**Course Content:**

| **Unit no.** | **Topics and their descriptions** | **contact hours** |
|---|---|---|
| 1 | An introduction to Critical Thinking<br>• What is Critical Thinking<br>o It's role in problem solving<br>o The difference between a critical thinker and one who is not<br>• Barriers that prevent us from thinking critically | 2 |
| 2 | The importance of being logical<br>• Key concepts of "Thinking fast and slow" - Logical fallacies & Mistakes we make when do not think "statistically" | 4 |
| 3 | Patterns in deductive logic<br>• Hypothetical syllogism - Categorical syllogism( Set theory concepts)<br>• Argument by elimination, based on maths, based on definition<br>• Evaluating deductive arguments – validity & soundness | 4 |
| 4 | Argumentation – the foundation of critical thinking<br>• Recognizing arguments and their structural components & indicator words<br>Analysis of arguments<br>• Categorical logic - VENN Diagrams to test logical "validity" | 4 |

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| | • Propositional logic - Complex statements & arguments<br>• Truth Tables – to test validity of complex statements | |
| 5 | Inductive reasoning<br>• The importance of inductive reasoning in hypothesis testing, analytics, belief systems, .<br>• Evaluating the strength of an inductive argument | 2 |
| 6 | Basic probability concepts<br>• Probability & frequency distributions<br>• Important parameters & measures<br>• Bayesian probability | 4 |

**Evaluation:** There will be 5 quizzes, on various topics

**References:**


1. "Thinking Fast and Slow"- Daniel Kahneman – Penguin Books
2. "Critical Thinking – Students Introduction" - Bassham, Irwin, Nardone, Wallace – McGraw Hill