Title of the Course Applied Ethics

Name of the Faculty : Ashwin Jayanti
Course code : HS0.303
L-T-P : 3-1-0
Credits : 4
Name of the Academic Program CHD

1. Prerequisite Course / Knowledge: Philosophy section of Thinking and Knowing in the Human Sciences – I

2. Course Outcomes (COs)

After completion of this course successfully students will be able to:

CO1: Explain the philosophical nature of the basic concepts and principles of ethics
CO2: Analyze ethical arguments for logical validity, soundness, and informal fallacies
CO3: Demonstrate the knowledge of conceptual challenges involved in normative inquiry in the ethical domain
CO4: Develop skills to formulate fundamental nuances in ethical justification and explanations
CO5. Identify the various kinds of normative elements that constitute ethical frameworks
CO6. Discuss the major tenets of normative ethical theories and their scope of application

3. Mapping of Course Outcomes (COs) with Program Outcomes (POs) and Program Specific Outcomes (PSOs) – Course Articulation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	1	2	3	1	1	3	2	3	1	1	-	3	1	1	2	3
CO2	2	2	3	3	2	3	2	3	1	3	1	3	1	1	2	3
CO3	2	2	2	3	1	3	2	3	1	2	1	1	1	1	2	3
CO4	1	2	2	3	1	2	2	3	2	2	-	2	1	2	1	3
CO5	2	2	3	3	1	2	3	3	1	1	1	3	1	2	2	2
CO6	2	2	3	3	1	3	3	3	2	2	1	2	1	1	3	2

'3' in the box denotes 'High-level' mapping, 2 for 'Medium-level' mapping, 1 for 'Low'-level' mapping

4. Detailed Syllabus:

Unit I – Introduction: Distinction between conventional and critical ethics, philosophical tools for argument analysis, intuition, evidence, justification, and explanation.
Unit II – Skepticism: Intrinsic vs Instrumental value, challenge of egoism, problem of cultural relativity and subjectivism, error theory and nihilism, distinction between being ethical and seeming ethical.
Unit III – Goodness: the problem of defining 'good', naturalistic fallacy and the open question argument, implications of the experience machine thought experiment.
Unit IV – Responsibility: challenge of attributing moral responsibility to agents, the control, competence and epistemic conditions of responsibility, moral luck.
Unit V – Normative theories: Consequentialism, deontology, and virtue ethics
Unit VI – Practical ethics: discussion of specific moral problems

Reference books:

1) Shafer-Landau, R. 2019. *Living Ethics: An Introduction with Readings*. Oxford University Press**.**
2) Shafer-Landau, R. 2013. *Ethical Theory: An Anthology 2nd Edition*. Wiley-Blackwell.
3) Cahn, S. M. (ed). 2020. *Exploring Ethics: An Introductory Anthology* 5th Edition. Oxford University Press.
4) Singer, P. 1986. *Applied Ethics*. Oxford University Press.
5) Cohen, A. et al. 2005. *Contemporary Debates in Applied Ethics*. Wiley-Blackwell.
6) Jackson, E. et al 2021. *Applied Ethics: An Impartial Introduction.* Hackett Publishing.

5.Teaching-Learning Strategies in brief:

The general teaching strategy employed is the use of moral dilemmas and conceptual puzzles to introduce course topics. Lectures make use of this strategy to impress upon students the need to critically reflect on ethical issues and the relevance of doing a careful, philosophical investigation of those issues. Student interaction at this stage is aimed at bringing out conflicting ethical intuitions. This is followed up by introducing proper vocabulary to map out the problems involved in normative moral assessment. Using case studies and toy examples, ethical principles and methods of inquiry are taught so that students develop effective reasoning skills to engage with any real-world ethical matter. Student interaction and discussion at this stage is aimed to give flesh to the intuitions identified in the previous stage. The teaching-learning strategy emphasizes the merits of avoiding simplistic solutions to complex ethical problems and instead ask meaningful questions that enrich moral debates. The second half of the course is done in a seminar style where students choose a moral problem and present it to the class for group discussion. Based on feedback from the instructor and peers, students modify their initial draft essay and refine their arguments about the topic culminating in the final presentation at the end of the semester.

**5. Assessment methods and weightages in brief: **

This is mainly a writing-driven course, and the exercise questions are carefully designed to make students think independently in ethical contexts. Students are assessed for abilities like logically dissecting issues, questioning assumptions, clarifying distinctions, and bringing out nuances. In assignments and exams, students are expected to demonstrate these abilities by presenting their views clearly, assessing competing positions systematically, anticipating possible objections to a reasoned conclusion and composing cogent responses to those objections. For the term paper, students are first asked to submit an essay where they survey a topic of their choice and identify the question they want to explore in detail for the term paper. The assessment components and their weightages are as follows. Assignments: 40%, class participation: 10%, Essay: 20%, Term paper: 30%.

Title of the Course **Automata Theory**

Name of the Faculty	Shantanav Chakraborty
Course Code	CS1.302
Credits	2
L-T-P	3-1-0
(L=Lecturehours, T=Tutorialhours, P=Practicalhours)	
Name of the Academic Program	B.Tech in Computer Science and Engineering

1. Prerequisite Course / Knowledge: Data structures, Elementary Formal Logic

2.Course Outcomes (COs)

After completion of this course successfully, the students will be able to

CO-1. Develop an understanding of the core concepts of Automata theory such as Deterministic Finite Automata, Non-deterministic Finite Automata, Regular Languages, Context Free Languages, Push down Automata, the basics of Turing Machines
CO-2. Design grammar sand automata for different languages
CO-3. Identify formal language classes and prove language member ship properties
CO-4. Describe the limitations of the different computation al models

3. Mapping of Course Outcomes (COs) with Program Outcomes (POs) and Program Specific Outcomes (PSOs)–Course Articulation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	2	2	1	1	1	1	-	-	2	2	1	2	3	1	1	3
CO2	2	2	3	1	2	-	-	-	2	2	1	2	3	1	1	3
CO3	2	2	3	1	1	-	-	-	2	2	1	2	3	1	1	3
CO4	1	2	2	1	1	1	-	-	2	2	2	1	2	1	1	3

'3'in the box de notes 'High-level'mapping,2for 'Medium-level'mapping,1 for'Low'-level' mapping

4. Detailed Syllabus:

Unit1: Introduction, Finite State Machines, Deterministic Finite Automata (DFA), Nondeterministic Finite Automata (NFA), Equivalence of NFA and DFA, Regular Expressions, Regular Languages, Closure
Properties of regular languages, Pumping Lemma, Grammars, Left and Right-linear grammars

Unit2: Context Free Grammar (CFG), Chomsky Normal Form, Push Down Automata (PDA), Equivalence of CFG and PDA, Context Free Languages (CFL), Deterministic PDA and Deterministic CFL, Pumping Lemma for context free languages

Unit 3: Introduction to Turing machines, Total Turing Machines, Recursive languages, Recursively enumerable languages, The Halting problem.

References:

- M. Sipser, Introduction to the Theory of Computation, Third Edition, Cengage Learning2012.
- J.E. Hopcroft, R. Motwani and J. Ullman, Introduction to Automata Theory, Languages and Computation, Third Edition, Pearson, 2006.

5. Teaching-Learning Strategies in brief:

Thelectureswillbearrangedinamannerthatfacilitatesinter-studentandfaculty-studentdiscussions. Additionally, the lectures will have small exercises that will ensure that the students actively participate in the learning activity and think out of the box. There will be more emphasis on ideas and reproduction of textbook material. There will be small homework problems that would help

the student to re-engage with the essential components of the lecture. Assignments will test the student's ability to apply key concepts learnt, and also inform the faculty of the progress being made by the students in acquiring them.

6. Assessment methods and weightages in brief:

Homework:25%
Quiz 1: 20%
Quiz 2: 20%
Finalexam:35%

Title of the Course — Basics of Ethics

Name of the faculty	Ashwin Jayanti + Guest Faculty
Course code	HS0.203
L-T-P	3-1-0
Credits	2
Name of the Academic Programs	B.Tech. in CSE, B.Tech in ECE

1.Prerequisite Course / Knowledge: Nil

2.Course Outcomes (COs)
After completion of this course successfully students will be able to:

CO1: Explain the philosophical nature of the basic concepts and principles of ethics
CO2: Analyze ethical arguments for logical validity, soundness, and informal fallacies
CO3: Demonstrate the knowledge of conceptual challenges involved in normative inquiry in the ethical domain
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CO3	2	2	2	3	1	3	2	3	1	2	1	1	1	1	2	3
CO4	1	2	2	3	1	2	2	3	2	2	-	2	1	2	1	3
CO5	2	2	3	3	1	2	3	3	1	1	1	3	1	2	2	2
CO6	2	2	3	3	1	3	3	3	2	2	1	2	1	1	3	2

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