"Certificate Course
2021 – 2022 "

" A Short Course in
Discrete Mathematics "

" Course Curriculum & Shedule "

Government General Degree College, Muragachha

Department of Mathematics

MURAGACHHA, NADIA, PIN- 741154

Phone No.: 03474-268008 web: www.muragachhagovtcollege.org e-mail: mgcnadia2015@gmail.com

Ref. No...

Dated: 23.08.2021

A Short Course in Discrete Mathematics

CERTIFICATE COURSE BY

DEPARTMENT OF MATHEMATICS

JOIN IN OUR PROGRAM...   *STAY AHEAD OF OTHERS*

Introduction To The Course: This course aims at introducing the concepts of lattices, Boolean algebras, switching circuits and graph theory. The course discusses some important applications of Boolean algebra and graph theory in real life situations through switching circuits and shortest path algorithms

Outcome: After the course the student will be able to understand the concepts of (a) lattices and their types; (b) Boolean algebra, switching circuits and their applications; (c) graphs, their types, and applications in study of shortest path algorithms.

CourseDuration: 30 hours (Theory)

Mode Of delivery: Online

Date: 22nd Oct to 30th Oct 2021

Ref. No..   Dated: 23.08.2021

Syllabus (Outline):

- Definitions, Examples, and basic properties of ordered sets, Order isomorphism, Hasse diagrams, Dual of an ordered set, Duality principle, Maximal and minimal elements

- Lattices as ordered sets, Lattices as algebraic structures, Sublattices.

- Boolean Algebras, De Morgan's laws, Boolean homomorphism, Representation theorem, Boolean polynomial functions

- Disjunctive normal form and conjunctive normal form, Minimal forms of Boolean polynomial, Karnaugh diagrams, Switching circuits and applications of switching circuits

- Introduction to graphs, Konigsberg Bridge problem, Definition, examples and basic properties of graphs, Subgraphs, Pseudographs.

- Complete graphs, Bipartite graphs, Isomorphism of graphs, Paths and circuits

- Eulerian circuits, Hamiltonian cycles, Adjacency matrix, Weighted graph.

- Travelling salesman problem, Shortest path, Dijkstra's algorithm.

Contact for information and registration:
Dr. Biswajit Saha and Mr. Prabir Chakraborty, Course Coordinators,
Department of Mathematics,
Government General Degree College, Muragachha
Mob No.: 7908483300 and 8013187678

Ref. No...........................

Dated: 23.08.2021

Certificate Course on "A Short Course in Discrete Mathematics" 2021

LECTURE AND LAB SCHEDULE

TOPIC	Date	NO. OF LECTURES/ HANDSONSESSION (IN HOURS)
Definitions, Examples, and basic properties of ordered sets, Order isomorphism, Hasse diagrams, Dual of an ordered set, Duality principle, Maximal and minimal elements	22.10.2021(11.00 AM- 01.00 PM) & (02.00 PM- 04.00 PM)	04
Lattices as ordered sets, Lattices as algebraic structures, Sublattices	23.10.2021 (11.00 AM- 01.00 PM) & (02.00 PM- 04.00 PM)	04
Boolean Algebras, De Morgan's laws, Boolean homomorphism, Representation theorem, Boolean polynomial functions	25.10.2021 (11.00 AM- 01.00 PM) & (02.00 PM- 04.00 PM)	04
Disjunctive normal form and conjunctive normal form, Minimal forms of Boolean polynomial, Karnaugh diagrams, Switching circuits and applications of switching circuits	26.10.2021 (11.00 AM- 01.00 PM) & (02.00 PM- 04.00 PM)	04
Introduction to graphs, Konigsberg Bridge problem, Definition, examples and basic properties of graphs, Subgraphs, Pseudographs	27.10.2021 (11.00 AM- 01.00 PM) & (02.00 PM- 04.00 PM)	04
Complete graphs, Bipartite graphs, Isomorphism of graphs, Paths and circuits	28.10.2021 (11.00 AM- 01.00 PM) & (02.00 PM- 04.00 PM)	04
Eulerian circuits, Hamiltonian cycles, Adjacency matrix, Weighted graph.	29.10.2021 (11.00 AM- 01.00 PM) & (02.00 PM- 04.00 PM)	04
Travelling salesman problem, Shortest path, Dijkstra's algorithm	30.10.2021 (11.00 AM- 01.00 PM)	02
Certificate Distribution	30.10.2021 (01.00 PM- 02.00 PM)	

23/08/21
23-08-2021

Course Coordinator
(Dr. Biswajit Saha & Mr. Prabir Chakraborty)
Government General Degree College, Muragachha

23/08/2021

Officer In-Charge
Government General Degree
College, Muragachha

Officer-In-Charge
Govt. General Degree College Muragacha
Muragacha, Nakashipara, Nadia

Study materials & References:

1. Davey, B. A., & Priestley, H. A. (2002). Introduction to lattices and order (2nd ed.). Cambridge University press, Cambridge

2. Goodaire, Edgar G., & Parmenter, Michael M. (2011). Discrete Mathematics with graph theory (3rd ed.). Pearson Education (Singapore) Pvt. Ltd. Indian Reprint.

3. Lidl, Rudolf & Pilz, Gunter. (2004). Applied Abstract Algebra (2nd ed.), Undergraduate Texts in Mathematics. Springer (SIE). Indian Reprint.

4. Rosen, Kenneth H. (2012). Discrete Mathematics and its applications, with combinatorics and graph theory. (7th ed.). McGraw Hill Education. Indian Reprint.

"Notice"
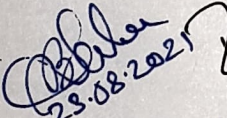
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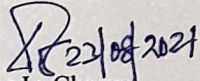
Dated: 23.08.2021

This is to notify all concerned that the Department of Mathematics is going to organize a certificate course on **'A Short Course in Discrete Mathematics'** in collaboration with the IQAC of this college for the all students of Mathematics Honours of this College from 22.10.2021 to 30.10.2021 free of cost. Certificate will be provided to the participating students after successful completion of the said course. Students of the Mathematics department of this college are requested to meet the course coordinator and enrol their names before commencement of the course.

Course Coordinator
(Dr. Biswajit Saha & Mr. Prabir Chakraborty)
Government General Degree College, Muragachha

Officer In-Charge
Government General Degree
College, Muragachha

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