

Government General Degree College, Salboni

Department of Chemistry

Add-on Course

on

Industrial Chemistry

(20th February-13th March, 2024)

Last date of Registration: 17th February, 2024

Registration link:

https://docs.google.com/forms/d/e/1FAIpQLScKkny9r5ZEFpEqXpWiRjzNnqvKB_Y_4zy3Ult8BcAEHmMzcUQ/viewform?vc=0&c=0&w=1&flr=0&gxid=-8203364

Course Content:

- Fuel Chemistry
- Lubricants
- Oil and Fats
- Paints
- Cement
- Food Safety Chemistry

Duration: 30 hours

Available seats: 20

Course Fees: NIL

**Eligibility: BSc(H/G)
students**

Course Coordinators:

**Dr. Shib Shankar Dash
Dr. Ipsita Kumar Sen**

Course Faculties:

**Dr. Shib Shankar Dash, Asst. Prof., GGDC Salboni
Dr. Ipsita Kumar Sen, Asst. Prof., GGDC Salboni
Dr. Animesh Mondal, Asst. Prof., GGDC Salboni
Dr. Sk Ajarul, Asst. Prof., GGDC Salboni**

Add-on Course on “Industrial Chemistry”

Organized By

Department of Chemistry

Government General Degree College, Salboni

(20th February-13th March, 2024)

About the Department:

The Department of Chemistry of Govt. General Degree College, Salboni started his journey from the academic session 2016-2017 with two students and one faculty member. Initially, only General course in Chemistry has been taught here. Afterwards, Chemistry Honours course (CBCS curriculum) has been introduced from the academic session 2018-2019 with intake capacity 20. Two good quality laboratories with adequate amount of chemicals, glass wares and instruments are available in the department for practical experiments. At present there are 4 faculty members in the department. Apart from teaching the faculty members are also engaged in research work on the modern and thrust areas in chemistry and publishing quality research papers in international journals.

Objectives of the Course:

The Department of Chemistry of Government General Degree College, Salboni is not only determined to educate and graduate rural students of this area but also committed to prepare them as per the needs of chemical science-based industries. To achieve this, the department is offering a Add-on course on Industrial Chemistry which aims to provide students with a basic scientific and technical knowledge of the various industrial processes. The course is designed to achieve the students an elementary understanding in Industrial Chemistry which will enable them for direct entry to the workplace with sound knowledge in the area of petrochemicals, cement, soap, paint and related multidisciplinary fields.

Learning Outcomes:

Upon completion of this Add-on course in Industrial Chemistry, students will be able to-

- Describe the industrial production of a number of important organic and inorganic chemicals.
- Learn about regulations for safe handling and use of chemicals.

- Know about the role of petroleum and petrochemical industry.
- Learn about different types of lubricants and applications of lubricant in Industry.
- Know about different types of oils, fat splitting and superiority of synthetic detergent and role of surfactants.
- Learn about various types of surface coatings, fillers, thinners, enamels and emulsifying agents.
- Know about different types of cement, cement manufacturing process.
- Know merits and demerits of colouring, flavouring and sweetening agents as food additives.

Duration of the Course: 30 hours.

Eligibility: B.Sc. (H/G) students

Commencement of Course: 20th February, 2024

Course Fees: NIL

Mode of course delivery: Offline

Syllabus:

Module	Title	Duration (Hours)
Module 1	INTRODUCTION TO INDUSTRIAL CHEMISTRY: Introduction to Industrial Chemistry, Classification and features of Chemical Industry, Raw materials for the chemical Industry, Unit operations and unit processes, Flow diagrams.	02
Module 2	SAFETY IN THE CHEMICAL LABORATORY AND INDUSTRY	02
Module 3	FUEL CHEMISTRY: 1. Review of energy sources (renewable and non-renewable). Classification of fuels and their calorific value. Coal, Carbonization of coal. Coal gas, producer gas and water gas composition and their uses. Industrial methods for the fractionation of coal tar, uses of coal tar-based chemicals.	03
	2. Petroleum and Petrochemical Industry: Composition of crude petroleum, Refining and different types of petroleum products and their applications. Fractional distillation (principle and process), Cracking (thermal and catalytic cracking), Reforming petroleum and non-petroleum fuels (LPG, CNG, LNG, biogas, fuels derived from biomass).	03

Module 4	LUBRICANTS: Definition, purpose and types of lubrication, names of common lubricants and uses, Flash point, Fire point, Pour point, Cloud point, selection of lubricant	02
Module 5	OILS AND FATS: Classification of oils, fat splitting, distillation of completely miscible and non-miscible oils, hydrogenation of oils, rancidity, saponification value, iodine number, acid value, Soap and Synthetic Detergent, preparation of soap and detergent, different types of soap and their composition, surfactants (LAS, ABS, LABS), detergent binders and builders.	03
Module 6	PAINTS: Composition, types (Snowchem, distemper), Varnishes: Definition, types, difference from paint, characteristics, Metallic coating; Galvanization, Electroplating, Tin plating, Lacquers.	03
Module 7	CEMENT: Raw materials, Composition and Manufacture, Setting and Hardening of cement, function of gypsum, Cement Mortar, Cement concrete, Lime mortar, Plaster of Paris.	03
Module 8	FOOD SAFETY CHEMISTRY: Food safety and Food Quality Management System, Food additive colours and preservatives, artificial sweeteners.	03
Module 9	PRACTICAL: 1. Determination of acid value of oils and fats. 2. Determination of saponification value of oils and fats. 3. Identification of adulteration in some common food items like chilli powder, turmeric powder.	06

Tentative Schedule of Class:

Date	9:10-10:10 AM	1:20-2:20 PM	2:20-4:20 PM
20.02.2024	AM	×	×
21.02.2024	SSD	×	×
22.02.2024	×	×	AM
23.02.2024	IKS	SSD	×
24.02.2024	SSD	×	IKS
26.02.2024	AM	×	×
27.02.2024	AM	×	×
29.02.2024	AM	×	SA

01.03.2024	×	IKS	×
02.03.2024	SSD	×	SSD+IKS
04.03.2024	SA	×	×
05.03.2024	SSD	×	×
06.03.2024	SA	×	×
07.03.2024	SA	×	SSD+IKS
08.03.2024	IKS	SSD	×
09.03.2024	×	×	SSD+IKS
12.03.2024	SA	×	×
13.03.2024	SA	×	×

SSD: Dr. Shib Shankar Dash, Assistant Professor of Chemistry, GGDC Salboni: Module 3 & 9

IKS: Dr. Ipsita Kumar Sen, Assistant Professor of Chemistry, GGDC Salboni: Module 1, 7 & 9

AM: Dr. Animesh Mondal, Assistant Professor of Chemistry, GGDC Salboni: Module 5 & 6

SA: Dr. Sk Ajarul, Assistant Professor of Chemistry, GGDC Salboni: Module 2, 4 & 8

Date of online test through Google form: 13.03.2024