

CH 419

Consumer Chemistry

(3-0-0-6)

Happy New Year 2024 and Welcome

JANUARY TO MAY 2024

Slot-F1 for CH-419

Institute Timetable for Winter (Jan-May 2024) Semester Class Timetable (Slots)

	7:55 – 8:50	9:00 – 9:55	10:00 – 10:55	11:00 – 11:55	12:00 – 12:55	1:00 – 1:55	2:00 – 2:55	3:00 – 3:55	4:00 – 4:55	5:00 – 5:55
Monday	A	B	C	D	F	F1	D1	C1	B1	A1
			ML1					AL1		
Tuesday	E	A	B	C	F	F1	C1	B1	A1	E1
			ML2					AL2		
Wednesday	D	E	A	B	G	G1	B1	A1	E1	D1
			ML3					AL3		
Thursday	C	D	E	A	G	G1	A1	E1	D1	C1
			ML4					AL4		
Friday	B	C	D	F	G	G1	F1	D1	C1	B1
			ML5					AL5		

Salient Points:

- A, B, C, D, A1, B1, C1, D1 have 4 hours per week.
- E, F, G, E1, F1, G1 have 3 hours per week
- 12-1 PM is the lunch break for those having theory courses in the afternoon.
- 1-2 PM is the lunch break for those having theory courses in the forenoon.

General Instructions:

1. Before academic registration, the list of courses to be offered (compulsory and elective) should be announced with their corresponding slots in which the classes for those courses are scheduled.
2. When scheduling the courses in slots, please keep in mind the fact that the backloggers will be registering for such courses and make the schedule keeping this in mind.
3. **First and third-year B.Tech./B.Des. courses should be scheduled in the afternoon session and second and fourth-year B.Tech./B.Des. courses should be scheduled in the morning session.**

Instructions regarding Examinations:

1. The schedule of mid-semester and end-semester examinations will be automatically fixed according to the slot in which the course is scheduled. This examination timetable will be fed into the software before academic registration. The students cannot register for two courses if the exams of these two courses are scheduled for the same session.
2. For B.Tech./B.Des., the examinations of **first-year** and **third-year** courses will be scheduled in the **afternoon** session (2 - 4 for mid sem, 2-5 for end sem). Similarly, the examinations of **second-year** and **fourth-year** courses will be scheduled in the **morning** session (9-11 for mid sem, 9-12 for end sem).

Syllabus CH-419

Organic electronics-Basics and concepts of modern day electronics. Organic Semiconductors; Conjugated polymers; development of next generation semiconductors; comparison with insulator materials/polymers; Energy level /band gap tuning in semiconductors; defects in semiconductor devices, processing of semiconductor devices; photoluminescence and electroluminescence; dielectric materials and applications; organic light emitting diodes; organic photovoltaics; organic field effect transistors; organic memory devices; Introduction to perovskite materials and devices; device engineering in organic devices; defect analysis and engineering.

Connection to polymers, materials, organic chemistry, acids and bases, connection to thermodynamics and kinetics, equilibria, light, daily life connections.

BOOKS

1. Chemistry Connections: The Chemical Basis of Everyday Phenomena (Complementary Science) 2nd Edition. by Kerry K. Karukstis, Gerald R. Van Hecke
2. Organic Electronics: Emerging Concepts and Technologies 1st Edition by Fabio Cicoira, Clara Santato
3. Organic electronics materials and devices. By Ogawa, Shuichiro ed.
4. Handbook of organic electronics and photonics. Nalwa, Hari Singh ed. American Scientific

OVERALL PLAN

04 Quiz each 20 marks at interval of 2-3 weeks (2nd, 6th, 10th, 14th week)

03 Assignments / presentation each 10 marks (3rd, 7th and 11th week)

Additional assessments online / phone / presentation (if needed)

Only **hand written** Quiz and Assignments and submitted as pdf will be considered for evaluation.

Attendance is mandatory and 0.5 marks per class.

What is meant by Sustainable Development?

- “Sustainable development” involves the inclusive development, achieved through harmonizing the three core elements: economic growth, social inclusion and environmental protection.
- It indicates that while fulfilling the present needs the resources for future generations must be considered and preserved.
- The overall development must be consciously built upon inclusive, sustainable and resilient future based principle for all living beings and the planet.

Adoption of Sustainable way of life

- a. It refers to a process or state that can be maintained indefinitely.
- b. Natural resources must be used in ways that do not create ecological debts by over exploiting the carrying and productive capacity of the earth.
- c. A minimum necessary condition for sustainability is the maintenance of the total natural capital stock at or above the current level.

The 17 GOALS and 169 TARGETS





7 AFFORDABLE AND CLEAN ENERGY



ENSURE ACCESS TO AFFORDABLE, RELIABLE, SUSTAINABLE AND MODERN ENERGY FOR ALL

GLOBALLY



12.6%

STILL LACK ACCESS TO MODERN ELECTRICITY

ENERGY ACCOUNTS FOR ROUGHLY

2/3

OF GLOBAL GREENHOUSE GAS EMISSIONS

IN INDIA

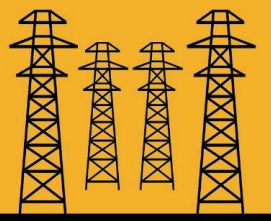
NEARLY

84.5%

PEOPLE HAVE ACCESS TO ELECTRICITY



100%
VILLAGES ELECTRIFIED



POWER CABLES FROM THE GRID HAVE REACHED A TRANSFORMER IN EACH VILLAGE

BUT 31 MILLION HOUSES STILL LACK ACCESS TO ELECTRICITY

AMBITIOUS RENEWABLE TARGETS BY 2022

175 GW

RENEWABLE ENERGY CAPACITY COMPRISING



100 GW



60 GW



10 GW



5 GW

SOLAR

WIND

BIOMASS

HYDRO POWER



The Targets against GOAL 7

7.1 Ensure universal access to affordable, reliable and modern energy services

7.1.1 Higher proportion of population with access to electricity

7.1.2 Higher proportion of population with primary reliance on clean fuels and technology

7.2 Increase substantially the share of renewable energy in the global energy mix

7.2.1 Renewable energy share in the total final energy consumption

7.3 Double the global rate of improvement in energy efficiency

7.3.1 Energy intensity measured in terms of primary energy and GDP



The Targets against GOAL 7

7.4 Enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology.

7.4.1 Mobilized amount of United States dollars per year starting in 2020 accountable towards the \$100 billion commitment.

7.5 Expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States and landlocked developing countries, in accordance with their respective programmes of support.

7.5.1 Investments in energy efficiency as a percentage of GDP and the amount of FDI in financial transfer for infrastructure and technology to sustainable development services.

Prioritize affordable and reliable /uninterrupted energy distribution for healthcare facilities



ENSURE ACCESS TO AFFORDABLE, RELIABLE,
SUSTAINABLE AND MODERN ENERGY FOR ALL

BEFORE COVID-19

EFFORTS NEED **SCALING UP**
ON SUSTAINABLE ENERGY

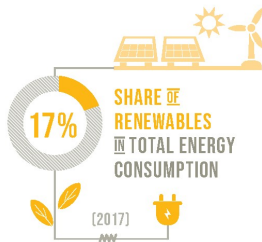
789 MILLION
PEOPLE LACK
ELECTRICITY
(2018)

COVID-19 IMPLICATIONS

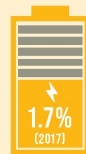
AFFORDABLE AND RELIABLE ENERGY
IS CRITICAL FOR HEALTH FACILITIES

1 IN 4 NOT ELECTRIFIED
IN SOME DEVELOPING COUNTRIES (2018)

STEPPED-UP EFFORTS
IN RENEWABLE ENERGY
ARE NEEDED



ENERGY EFFICIENCY
IMPROVEMENT RATE
FALLS SHORT OF
3% TARGET



FINANCIAL FLOWS TO DEVELOPING COUNTRIES
FOR RENEWABLE ENERGY ARE **INCREASING**

\$21.4
BILLION
(2017)



BUT ONLY **12%** GOES TO LDCs

- Healthcare facilities not properly electrified
- Energy deficiency was found to be approximately 25%
- Another major quarter had unscheduled power cuts
- Not able to provide even basic essential health care services
- These deficiencies weakened the health care system
- Response to the current health crisis was very slow
- LDCs (Least developed countries) need to be provided more financial support to harness renewable energy

Promote sustained, inclusive and sustainable energy focused on healthcare, economic growth, full and productive employment and decent work for all.



Summary of GOAL 7-Affordable and Clean Energy

- By the year 2030 the **Goal 7** of the **SDGs** aims –

To correct the enormous energy imbalance by ensuring that everyone has access to affordable, reliable, and modern energy services.

To expand energy access, it is crucial to enhance energy efficiency and to invest in renewable energy.