

COURSE TEMPLATE

1.	Department/Centre proposing the course	Chemistry
2.	Course Title (< 45 characters)	GENERAL CHEMISTRY
3.	L-T-P structure	3-0-0
4.	Credits	3
5.	Course number	CYL100
6.	Status (category for program)	First-Year Core

7.	Pre-requisites (course no./title)	None
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8.	Status vis-à-vis other courses (give course number/title)	
8.1	Overlap with any UG/PG course of the Dept./Centre	No
8.2	Overlap with any UG/PG course of other Dept./Centre	No
8.3	Supercedes any existing course	No

9.	Not allowed for (indicate program names)	NA
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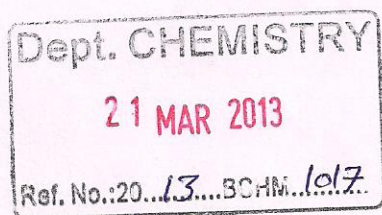
10.	Frequency of offering	☒ Every sem ☐ 1 st sem ☐ 2 nd sem ☐ Either sem
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11.	Faculty who will teach the course All faculty members in the department.	
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12.	Will the course require any visiting faculty?	No
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13.	Course objective (about 50 words): Everything in the environment, whether naturally occurring or man made, is composed of chemicals. This course aims at providing an introduction to the basic knowledge and concepts of chemistry. The objective of the course is the learning of composition, properties and behavior of matter.	
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14.	Course contents (about 100 words) (Include laboratory/design activities): Entropy and free energy changes in chemical processes, chemical equilibria, phase transformations, structure and dynamics of microscopic systems, physical basis of atomic and molecular structure, three-dimensional arrangement of atoms in molecules, structure and reactivity of organic, inorganic and organometallic compounds, basic strategies for synthesis of carbon and silicon containing compounds, coordination chemistry, role of inorganic chemistry in living systems	
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15. Lecture Outline (with topics and number of lectures)

Module no.	Topic	No. of hours
1	Driving force in physical and chemical transformation: Entropy and free energy changes	5
2	Physical transformation of substances: Phase and chemical equilibria	5
3	Structure and dynamics of microscopic systems: Application of quantum theory to chemical systems	6
4	Physical basis of atomic and molecular structure	4
5	Three dimensional arrangement of atoms in molecules: Stereochemistry	3
6	Structural effects on reactivity: acidity, basicity and nucleophilicity as variables, kinetic vs. thermodynamic control of reactions	4
7	Molecular synthesis and reaction mechanism of silicon and carbon based compounds	6
8	Structure and catalytic applications of organometallic compounds	3
9	Electronic spectra and magnetic properties of coordination compounds	3
10	Examples illustrating the role of metal ions in biological systems	3
11		
12		
COURSE TOTAL (14 times 'L')		42

16. Brief description of tutorial activities

NA

17. Brief description of laboratory activities

Module no.	Experiment description	No. of hours
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
COURSE TOTAL (14 times 'P')		

18. Suggested texts and reference materials

STYLE: Author name and initials, Title, Edition, Publisher, Year.

- Atkins, P.; de Paula, J. Physical Chemistry, 9th Edition, Oxford University Press, 2010.
- McQuarrie, D. A.; Simon, J. D. Physical Chemistry: A Molecular Approach, 1st Edition, University Science Books, 1997.
- Levine, I. Physical Chemistry, 6th Edition, McGraw Hill Science, 2008.
- Engel, T.; Reid, P. Physical Chemistry, 3rd Edition, Prentice Hall, 2012.
- Graham Solomons, T. W. Organic Chemistry, 10th Edition, Wiley, 2009.
- Morrison and Boyd, Organic Chemistry, 6th Edition, Prentice Hall, 2007.
- Huheey, J. E.; Keiter, E. A.; Keiter, R. L.; Medhi, O. K. Inorganic Chemistry - Principles of Structure and Reactivity, 4th Edition, Pearson Education, 2006.

19. Resources required for the course (*itemized & student access requirements, if any*)

19.1	Software	Molecular modelling softwares
19.2	Hardware	Visualizers, tablet PCs.
19.3	Teaching aides (videos, etc.)	
19.4	Laboratory	
19.5	Equipment	
19.6	Classroom infrastructure	
19.7	Site visits	

20. Design content of the course (*Percent of student time with examples, if possible*)

20.1	Design-type problems	
20.2	Open-ended problems	
20.3	Project-type activity	
20.4	Open-ended laboratory work	
20.5	Others (please specify)	

Date: 21/3/13



(Signature of the Head of the Department)

Dean (Academic)