Study & Evaluation Scheme

of

Bachelor of Science (Hons.) (Chemistry)

[Applicable for Academic Session 2019-20]

TEERTHANKER MAHAVEER UNIVERSITY

N.H.-24, Delhi Road, Moradabad, Uttar Pradesh-244001

Website: www.tmu.ac.in

Program Structure-B.Sc. (H) Chemistry

A. Introduction:

Chemistry is referred to as the science that systematically studies the composition, properties, and reactivity of matter at atomic and molecular level. The scope of chemistry is very broad. The key areas of study of chemistry comprise Organic chemistry, Inorganic Chemistry, Physical Chemistry and Analytical Chemistry. Organic chemistry deals with study of substances containing carbon mostly; inorganic chemistry deals with study of all other elements/compounds/substances and their chemical properties. Physical chemistry deals with applications of concepts, laws to chemical phenomena. Analytical chemistry, in general, deals with identification and quantification of materials. Development of new interdisciplinary subjects like nano-materials, biomaterials, etc. and their applications from chemistry point of view added new dimension to materials chemistry. Thus, the degree programme in chemistry also intended to cover overlapping areas of chemistry with physics, biology, environmental 10 sciences. Further, a broad range of subjects such as materials chemistry, biomaterials, nanomaterials, environmental chemistry, etc., has also been introduced which can be helpful for students/faculty members to broaden the scope of their studies and hence applications from job prospective point of view. Therefore, as a part of efforts to enhance employability of graduates of chemistry, the curricula also include learning experience with industries and research laboratories as interns. In addition, industrial visits/industrial projects are encouraged and added to the curriculum in order to enhance better exposure to jobs/employment opportunities in industries, scientific projects and allied sectors. This modified syllabus has been drafted to enable the students to equip for national level competitive exams that they may attempt in future. To ensure implementation of a holistic pedagogical model, several allied disciplines are covered/introduced in this framework, including Physics, Mathematics, Biology and a number of generic, and ability enhancement electives. In addition, employability of B.Sc. Chemistry graduate is given due importance such that their core competency in the subject matter, both theoretical and practical, is ensured. To expand the employability of graduates, a number of skill development courses are also introduced in this framework.

The aim of bachelor's degree programme in chemistry is intended to provide: (i).Broad and balance knowledge in chemistry in addition to understanding of key chemical concepts, principles and theories. (ii).To develop students' ability and skill to acquire expertise over solving both theoretical and applied chemistry problems. (iii). To provide knowledge and skill to the students' thus enabling them to undertake further studies in chemistry in related areas or multidisciplinary areas that can be helpful for self employment/entrepreneurship. (iv).To provide an environment that ensures cognitive development of students in a holistic manner. A complete dialogue about chemistry, chemical equations and its significance is fostered in this framework, rather than mere theoretical aspects. (v).To provide the latest subject matter, both theoretical as well as practical, such a way to foster their core competency and discovery learning. A chemistry graduate as envisioned in this framework would be sufficiently competent in the field to undertake further discipline-specific studies, as well as to begin domain-related employment. (vi).To mould a responsible citizen who is aware of most basic domain-independent knowledge, including critical thinking and communication. (vii).To enable the graduate prepare for national as well as international competitive examinations, especially UGC-CSIR NET and UPSC Civil Services Examination.

B. Choice Based Credit System (CBCS)

Choice Based Credit System (CBCS) is a versatile and flexible option for each student to achieve his target number of credits as specified by the UGC and adopted by our University.

Registrar

Aptitude in Semester I, II, III & IV semesters and two courses of Soft Skills in III & IV Semesters and will carry no credit, however, it will be compulsory for every student to pass these courses with minimum 45% marks to be eligible for the certificate. These marks will not be included in the calculation of CGPI. Students have to specifically be registered in the specific course of the respective semesters.

- ***Skill Enhancement Course:*** This course may be chosen from a pool of courses designed to provide value-based and/or skill-based knowledge.

- ***Generic/Open Elective Course (OEC):*** Open Elective is an interdisciplinary additional subject that is compulsory in a program. The score of Open Elective is counted in the overall aggregate marks under Choice Based Credit System (CBCS). Each Open Elective paper will be of 3 Credits in V semesters. Each student has to take Open/Generic Electives from department other than the parent department. Core / Discipline Specific Electives will not be offered as Open Electives.

- ***Mandatory Course (MC):*** This is a compulsory course that does not have any choice and will be of 3 credits. Each student of B.Sc (H). Program has to compulsorily pass the Environmental Studies and Human values & professional Ethics.

C. Programme Outcomes (POs)

The learning and abilities or skills that a student would have developed by the end of three-years B.Sc (H) Programs:

PO – 1	**Critical thinking -** This is based on the assumption, thinking and actions. These assumptions are tested for accuracy & validity taking into consideration the ideas and decisions. These ideas may be collected from intellectual organization or personal from different prospectus.
PO – 2	**Effective communication-** Effective communication an important tool to enhance the effectiveness of learning among the students. The speaking, reading & writing must be followed correctly.
PO – 3	**Social interaction –**Social interaction also play important role to reads the conclusion in group settings.
PO – 4	**Effective citizenship-** This contributes in the national development and promptness to achieve the goals. It develops awareness through volunteering.
PO – 5	**Ethics-** It has direct impact to recognize the different value systems. It gives proper understanding in different dimension for making decisions.
PO – 6	**Environment and sustainability-** Essential to understand the environmental issues & sustainable development.
PO – 7	**Self directed & lifelong learning –** Acquire the ability to engage in independent and life- long learning in broad spectrum including socio technological changes.
PO- 8	**Problem analysis & Solving:** Identify, formulate, research literature, and analyze complex basic sciences problems reaching substantiated conclusions using first principles of mathematics, natural sciences.
PO- 9	**Entrepreneurship:** An Entrepreneurship cut across every sector of human life including the field of engineering, engineering entrepreneurship is the process of harnessing the business opportunities in engineering and turning it into profitable commercially viable innovation.
PO- 10	**Interpersonal skills:** Interpersonal skills involve the ability to communicate and build relationships with others. Effective interpersonal skills can help the students during the job interview process and can have a positive impact on your career advancement.

B.Sc. (H) (Chemistry)-Semester V

S. No	Category	Course Code	Course	Periods			Credit	Evaluation Scheme		
				L	T	P		Internal	External	Total
1	CC	BAS525	Organic Chemistry-IV	4	-	-	4	40	60	100
2	CC	BAS526	Physical Chemistry-V	4	-	-	4	40	60	100
3	MC	BHM515	Human Values & Professional Ethics	3	-	-	3	40	60	100
DSE-I										
4	DSE		Discipline Specific Elective Courses: Discipline Specific Elective Course-I	4	-	-	4	40	60	100
5	DSE		Discipline Specific Elective Courses: Discipline Specific Elective Course-I(Lab)	-	-	4	2	50	50	100
6	OEC		Open Elective Course: Open Elective-I	3	-	-	3	40	60	100
7	LC	BAS561	Organic Chemistry-IV (Lab)	-	-	4	2	50	50	100
8	LC	BAS562	Physical Chemistry-V (Lab)	-	-	4	2	50	50	100
9	PROJ	BAS598	Industrial Training & Presentation	-	-	6	3	50	50	100
10	DGP	BGP511	Discipline & General Proficiency	-	-	-	-	100	-	100
			Total	**18**	**-**	**18**	**27**	**400**	**500**	**900**

MOOC Course:

1	MOOC-2	MOOC13	MOOC Program –II (Optional)	-	-	-	2	-	100	100

B.Sc. (H) (Chemistry)-Semester VI

S. No	Category	Course Code	Course		Periods			Credit	Evaluation Scheme		
					L	T	P		Internal	External	Total
1	CC	BAS624	Inorganic Chemistry-IV		4	-	-	4	40	60	100
2	CC	BAS625	Organic Chemistry-V		4	-	-	4	40	60	100
DSE- II											
3	DSE		Discipline Specific Elective Courses	Discipline Specific Elective Course-II	4	-	-	4	40	60	100
4	DSE			Discipline Specific Elective Course-II (Lab)	-	-	4	2	50	50	100
DSE-III											
5	DSE		Discipline Specific Elective Courses	Discipline Specific Elective Course-III	4	-	-	4	40	60	100
6	DSE			Discipline Specific Elective Course-III (Lab)	-	-	4	2	50	50	100
7	OEC		Open Elective Course	Open Elective-II	3	-	-	3	40	60	100
8	LC	BAS661	Inorganic Chemistry-IV (Lab)		-	-	4	2	50	50	100
9	LC	BAS662	Organic Chemistry-V (Lab)		-	-	4	2	50	50	100
10	DGP	BGP611	Discipline & General Proficiency		-	-	-	-	100	-	100
			Total		**19**	**-**	**16**	**27**	**400**	**500**	**900**

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