



All Heads of Institutions affiliated to CBSE

**Subject: Introduction of 'Applied Mathematics (241)' as an Academic Elective at Senior Secondary Level**

As part of Systemic Reforms, National Curriculum Framework 2005 recommends that Subjects such as Mathematics and English could be examined at two levels; standard and higher level. In the long term, all subjects could be offered at two levels with students doing at least three/two of the six at standard level and the remaining three/ four at higher level. As per this recommendation, Board has already offered two levels of examinations in Mathematics at secondary level.

As Secondary School Education prepares students to explore future career options after graduating from the school, Mathematics is an important subject which helps students to choose various fields of their choices. Mathematics is widely used in higher studies in the field of Economics, Commerce, Social Sciences and many others. **It has been observed that the existing syllabus of Mathematics aligns well with Science subjects, but does not align well with Commerce or Social Science-based subjects in university education.** By keeping this in mind, one more elective course in Mathematics syllabus will be offered for Sr. Secondary classes with an aim to provide students relevant experience in Mathematics which can be used in the fields other than Physical Sciences.

A course by this name was earlier designed as a skill subject. The academic course that has been designed now by the same name has several value additions to develop substantial mathematical skills and methods needed in other subject areas. Topics covered in two years shall aim to enable students to use mathematical knowledge in the field of business, economics and social sciences. It aims to promote appreciation of mathematical power and simplicity for its countless applications in diverse field. It is expected that the new subject of Applied Mathematics is taught by connecting concepts to the application in various fields, thereby enabling students to develop 21<sup>st</sup> century competencies such as critical thinking, problem solving, logical reasoning, mathematical thinking, etc.

**Objectives:**

- To develop an understanding of basic mathematical and statistical tools and their applications in the field of commerce (business/finance/economics) and social sciences;
- To model real world experiences/problems into mathematical expressions using numerical/algebraic/graphical representation;
- To make sense from the data by organizing, representing, interpreting, analysing, and to make meaningful inferences from the real-world situations;
- To develop logical reasoning skills and apply the same in problem solving;
- To reinforce mathematical communication by formulating conjectures, validating logical arguments and testing hypothesis;

- f) To make connections between Mathematics and other disciplines.

Therefore, as per the recommendations of the Curriculum Committee of the Board, and duly approved by the Governing body, CBSE is introducing a new Academic Elective at Senior Secondary level named as '**Applied Mathematics (Code No. 241)**' starting from the current **Academic Year, that is from 2020-21 session for Class XI**. The details of this scheme are as under:

- The course can be opted for the class XI students from this Academic year (2020-21) as an Academic elective.
- Students who want to opt for higher studies in Mathematics at the University level as an Elective or want to take admission in Mathematics Honours course or Engineering course may take Mathematics (041). The Applied Mathematics (241) course is designed to enhance the knowledge and skills of Mathematics that are required to be successful in different fields of their future career. Therefore this course may be selected by students keeping this aspect in mind.
- Students, Parents and Schools may take a conscious choice in selection of this subject by taking into consideration the scope of this subject in getting admission to different courses at University level.
- Approach of Applied Mathematics subject will be practical in nature and the students are expected to learn through practical applications of Mathematics in different disciplines.
- In view of introduction of Applied Mathematics as an Academic elective, the **students who have passed Basic Mathematics (241) in class X are now allowed to offer the new academic elective Applied Mathematics (241) at Senior Secondary Level.**
- Accordingly, the students who have passed Basic Mathematics (241) as well as Standard Mathematics (041) in Class X of CBSE exam are eligible for this course. **However, it is once again clarified that students who have passed Mathematics-Basic (241) at Secondary level are not eligible to opt for Mathematics (041) at Sr. Secondary Level.**
- The affiliated schools who have permission for running Mathematics course in their school at Sr. Secondary Level shall be automatically eligible to run this course with the availability of necessary infrastructure and human resources.
- The detailed modalities for opting this subject shall be made available at the time of registration for this course at class XI.
- It may be noted that those students who have earlier offered Applied Mathematics as a Skill Elective will offer Applied Mathematics as an Academic Elective in the current year 2020-21 for class XII. They have to follow the syllabus of Applied Mathematics offered as an Academic subject. Applied Mathematics Course will not be available from the current Academic Session 2020-21 as Skill subject.

Frequently Asked Questions (FAQs) on introduction of Applied Mathematics at Senior Secondary level are enclosed for ready reference. Support material, Design of question papers

and Sample Question Papers for this subject will be made available on [www.cbseacademic.nic.in](http://www.cbseacademic.nic.in) in due course of time.



(Dr. Joseph Emmanuel)  
Director (Academics)

**Encl : Frequently Asked Questions on introduction of Applied Mathematics**

Copy to the respective Heads of Directorates, Organizations and Institutions as indicated below with a request to disseminate the information to all the schools under their jurisdiction:

1. The Commissioner, Kendriya Vidyalaya Sangathan, 18-Institutional Area, Shaheed Jeet Singh Marg, New Delhi-16
2. The Commissioner, Navodaya Vidyalaya Samiti, B-15, Sector-62, Institutional Area, Noida-201309
3. Additional Chief Secretary/Principal Secretary/School Education, Governments of Delhi/Sikkim/Chandigarh/Arunachal Pradesh/Andaman And Nicobar Islands/Odisha/Chhattisgarh/Tripura
4. The Director of Education, Directorate of Education, Govt. of NCT of Delhi, Old Secretariat, Delhi-110 054
5. The Director of Public Instructions (Schools), Union Territory Secretariat, Sector 9, Chandigarh-160 017
6. The Director of Education, Govt. of Sikkim, Gangtok, Sikkim –737101
7. The Director of School Education, Govt. of Arunachal Pradesh, Itanagar –791 111
8. The Director of Education, Govt. of A&N Islands, Port Blair – 744101
9. The Director of Education, S.I.E., CBSE Cell, VIP Road, Jungle Ghat, P.O. 744103, A&N Island
10. The Director, Central Tibetan School Administration, ESSESS Plaza, Community Centre, Sector 3, Rohini
11. The Additional Director General of Army Education, A – Wing, Sena Bhawan, DHQ, PO, New Delhi-110001
12. The Secretary AWES, Integrated Headquarters of MoD (Army), FDRS Building No. 202, Shankar Vihar (Near APS), Delhi Cantt-110010
13. The Under Secretary (EE-1), MHRD, Govt. of India, Department of SE&L, Shastri Bhawan, New Delhi-01
14. All Regional Directors/Regional Officers of CBSE with the request to send this circular to all the Heads of the affiliated schools of the Board in their respective regions
15. All Joint Secretaries/ Deputy Secretaries/ Assistant Secretaries/ Analysts (Academic, Training and Skill Unit), CBSE
16. In charge IT Unit with the request to put this circular on the CBSE Academic website
17. The Head Public Relations Unit, CBSE
18. PPS to Chairperson, CBSE
19. SPS to Secretary, CBSE
20. SPS to Director (EDUSAT, Research and Development), CBSE
21. SPS to Director (Information Technology), CBSE
22. SPS to Director (Academics), CBSE
23. SPS to Controller of Examinations, CBSE
24. SPS to Director (SE & T), CBSE
25. SPS to Director (Professional Exams), CBSE



## **FAQs on Sr. Secondary Academic Elective ‘Applied Mathematics(241)’**

**Q.1. What is the difference between the subjects of ‘Mathematics (041)’ and ‘Applied Mathematics (241)’ at Sr. Secondary Level?**

**Ans:** The existing Mathematics (041) for Senior Secondary is a course meant for students to pursue pure Mathematics/Physical Sciences/Engineering at University Level. However, there are many students who want to learn Mathematics which is useful for better performance in their selected subjects; ‘Applied Mathematics’ is meant for such students and the curriculum focuses on the Application of Mathematics.

**Q.2. Will this lead to dilution of Mathematics syllabus/teaching at Sr. Secondary Level?**

**Ans:** No, the idea is to offer an option for those Sr. Secondary students who wish to learn Mathematics as per the requirements of their areas of study such as Business/Economics/Finance/Life Science etc in future careers in a different format.

**Q.3. Can a student opt for both ‘Mathematics (041)’ and ‘Applied Mathematics’?**

**Ans:** No. There is only one option, either Mathematics or Applied Mathematics.

**Q.4. To continue Mathematics as a subject for higher education, which course will a student need to pass?**

**Ans:** Both courses have their own uniqueness. Students who want to opt for Mathematics/Physical Science/Engineering subjects at the University level as an Elective or want to take admission in Mathematics Honors course or Engineering and Technology course may take Mathematics (041). The Applied Mathematics course is designed to enhance the knowledge and skills of Mathematics required to be successful in other different fields of their future career and may be selected by keeping this in mind.

**Q.5. If a student fails in Mathematics (041) in the Board Examination, will the student be allowed to take up Applied Mathematics(241) or vice versa during compartmental examination?**

**Ans:** No. These are two different courses and one is not a substitute for the other.

**Q.6 If a student has passed Basic Mathematics in Grade X, can he/she offer 'Applied Mathematics' at Sr. Secondary Level?**

**Ans:** Yes, a student who has passed Basic Mathematics at Secondary level can offer Applied Mathematics at Sr. Secondary level. This option is now available due to introduction of Applied Mathematics. However, such students cannot offer Mathematics (041) at Sr. Secondary Level.

**Q.7 Can a student who has passed Standard Mathematics in Grade X, offer Applied Mathematics at Sr. Secondary level ?**

**Ans:** Yes. A student who has passed Standard Mathematics in class X can also offer Applied Mathematics at Sr. Secondary Level.

**Q.8 Is Applied Mathematics a skill subject or Academic elective study?**

**Ans:** The earlier skill subject by the same name, that is, Applied Mathematics will be discontinued from the Academic session 2020-21. Class XI standard students under Skill Education Scheme of Applied Mathematics in the academic session 2019-20, will now be allowed to opt only for Academic Elective subject of Applied Mathematics in the session 2020-21.

**Q.9 What is the difference between earlier Applied Mathematics(840) as skill subject and this newly introduced Applied mathematics(241) as an Academic Elective?**

**Ans:** The focus of any skill subject is on a particular job role. However Applied Mathematics as an elective focus on Mathematics as a discipline with special emphasis on its applications.

**Q.10 I took Applied Mathematics (840) as Skill subject in Grade XI. Now I am in Grade XII. What happens now?**

**Ans:** All the students who have offered Applied Mathematics (840) as a Skill subject at class XI can automatically offer it as an Academic elective in class XII.

**Q.11 I took Applied Mathematics (840) as a skill subject in XI. Can I shift to Applied Mathematics (241) in XII?**

**Ans:** Yes, if you have already opted this subject in class XI during 2019-20.

**Q. 12. Can I apply for Applied Mathematics as a skill subject in class 11 in the 2020-21 academic session?**

No one will be able to offer Applied Mathematics as skill subject in class XI from the academic session 2020-21.

**Q.13 How I can get the Sample Papers and Q.P designs of Applied Mathematics?**

**Ans:** Sample papers and Blue Print based on the curriculum for 2020-21 will be made available on: [www.cbseacademic.nic.in](http://www.cbseacademic.nic.in), in due course of time.

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