

# COMPUTERS AND COMMUNICATION TECHNOLOGY

## PART I

**Class XI**



राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्  
NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING

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# FOREWORD

The National Curriculum Framework (NCF) 2005 recommends that children's life at school must be linked to their life outside the school. This principle marks a departure from the legacy of bookish learning which continues to shape our system and causes a gap between the school, home and community. The syllabi and textbooks developed on the basis of NCF signify an attempt to implement this basic idea. They also attempt to discourage rote learning and the maintenance of sharp boundaries between different subject areas. We hope these measures will take us significantly further in the direction of a child-centred system of education outlined in the National Policy on Education (1986).

The success of this effort depends on the steps that school principals and teachers will encourage children to reflect on their own learning and to pursue imaginative activities and questions. We must recognise that, given space, time and freedom, children generate new knowledge by engaging with the information passed on to them by adults. Treating the prescribed textbook as the sole basis of examination is one of the key reasons why other resources and sites of learning are ignored. Inculcating creativity and initiative is possible if we perceive and treat children as participants in learning, not as receivers of a fixed body of knowledge. These aims imply considerable change in school routines and mode of functioning. Flexibility in the daily time-table is as necessary as rigour in implementing the annual calendar so that the required numbers of teaching days are actually devoted to teaching.

NCF-2005 envisages an increase in the optional number of subjects available for students of Classes XI and XII. This textbook marks an attempt in this direction. Its subject matter concerns how we work with computers, rather than about how computers work. It is expected that this textbook will be used with the help of methods of teaching which might enhance the flexible and participatory nature of new communication technologies.

NCERT appreciates the hard work done by the Textbook Development Committee and its Chief Advisor, Professor M.M. Pant, former Pro-Vice Chancellor,

Indira Gandhi National Open University, New Delhi. We are indebted to the institutions and organisations which have generously permitted us to draw upon their resources, material and personnel. We are especially grateful to the members of the National Monitoring Committee, appointed by the Department of Secondary and Higher Education, Ministry of Human Resource Development under the Chairpersonship of Professor Mrinal Miri and Professor G.P. Deshpande, for their valuable time and contribution.

As an organisation committed to systemic reform and continuous improvement in the quality of its products, NCERT welcomes comments and suggestions which will enable us to undertake further revision and refinement.

New Delhi  
May 2008

*Director*  
*National Council of Educational*  
*Research and Training*

# PREFACE

Computers have become a way of life in the present day world. That everyone should be educated about the implications of this technology is the need of the hour. Till now NCERT has not proposed a course or brought out a textbook in this area. The course outlined for this textbook is an attempt to design a friendly course that would not only be contemporary but also leave sufficient scope for expansion into unknown realms of computer activity that may emerge in future.

The National Curriculum Framework 2005 recommends that theoretical component of Higher Secondary stage should emphasise on problem solving methods and that the awareness of historical development of key concepts be judiciously integrated into the content of a subject. It also recommends that given the pervasive impact of computer technologies, a course related to this should address this infrastructural challenge seriously and explore viable and innovative alternatives with regard to hardware, software and connectivity technologies appropriate for rural and urban Indian schools.

NCF 2005 states that the book should act as an instrument for achieving social change in order to reduce the divide based on economic class, gender, caste, religion and region. NCF also speaks about tremendous effectiveness of the computer and computing technology in shaping modern society which has created the need for an educated public that can utilise such technology most effectively for the betterment of society and humankind. This book is aligned to these broad guidelines of NCF.

Presumably, this would be a coveted book for “everybody”, irrespective of any particular stream of higher secondary stage, for it deals with the real challenges that the discipline is trying to solve. It emphasises development of problem-solving and, equally important, problem – formulating skills. It reduces the importance of technology and underscores the need for learning skills to manipulate the technology. It focuses on some of the real problems that come up with the expansion of the technology – security, piracy and digital identity. Above all, the course focuses as much on the excitements as on the limitations of the new information

technology. Effective integration of information and communication technologies into all curricula assists students in developing the abilities to use, manage, and understand the technologies.

The National Knowledge Commission refers to preparing a work-force adequately skilled and oriented to actively participate in the emerging Knowledge Economy. This book would be a major contributor to developing the skill sets required for all school leavers.

The Class XI textbook contains fourteen chapters under six themes/units, viz., Welcome to the World of Computers and Communication Technology; Workplace Productivity Tools; Communication Concepts and Skills; Web Publishing Technology; Teamwork and Web Based Collaboration Tools and Emerging Technologies. The book has been conscientiously designed and is the result of the renewed efforts of the Textbook Development Team comprising of school teachers, subject experts, academicians and technical experts from government, non-government and private institutions/organisations. Some of the members worked at the advisory level while others worked towards the actual developmental activity. It is hoped that the students will appreciate the beauty and logic of computers and communication technology. It has truly been a team work.

The course is not biased towards any stream; it can be opted as an elective subject with any other combination, be it science, commerce, arts or humanities. The students may or may not continue to study about computers beyond the higher secondary stage but it seems they will find the inherent logic behind CCT useful in any other branch they may like to pursue, be it administration, social sciences, environment, engineering, technology, biology, medicine or any other branch of knowledge. In order to prepare a child for worldly wise a full chapter is devoted to “Soft Skills for Effective Communication”. For those who pursue computers beyond this stage the content of the book will certainly provide a sound base.

In this book we have tried to bring in a conceptual coherence. The pedagogy and the use of easily understandable language are at the core of our effort without sacrificing the rigour of the subject. The nature of the subject of CCT is such that a certain minimum use of mathematics is a must. We have tried to develop the mathematical formulations in a simple and logical fashion as far as possible.

This book has some features which, we earnestly hope will enhance its usefulness for the students. Each chapter is provided with objectives in the beginning and a summary at its end for a quick overview of the contents of the chapter. There are some questions which require critical thinking which would make a student think about real-time application of CCT. Further, a large number of solved examples are included in the text in order to clarify the concepts and/or to illustrate the application of these concepts in everyday real-life situations. Some Practical activities/Case studies have been included which provokes students for deep thinking. Some of these are from real-life situations. Students are urged to solve

these and in doing so, they may find them very educative. Some items inside boxes are introduced in many chapters either for this purpose or to highlight some special features of the contents requiring additional attention of the learners. Some information has been provided in shaded box which is meant for supplementary reading and not for evaluation. Glossary of terms and concepts is given towards the end which will act as a ready reckoner.

Completing this book has only been possible because of the spontaneous and continuous support of many people. We express our gratitude to the Director, NCERT, for entrusting us with the task of preparing this textbook as a part of national effort for improving general/school education. The Head, Department of Computer Education and Technological Aids, NCERT, besides being a member of the Textbook Development Team, was always willing to help us in our endeavour in every possible way.

The draft got excellent academic inputs from teachers, students and experts who sincerely suggested improvement during the development of this book. We are thankful to all those who conveyed these inputs to NCERT. We are also thankful to the members of the Review Workshop organised to discuss and refine the first draft.

We welcome suggestions and comments from our valued users, especially students and teachers. We wish our young readers a happy journey to the exciting realm of CCT.

*M. M. Pant*  
*Chief Advisor*  
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**WE, THE PEOPLE OF INDIA**, having solemnly resolved to constitute India into a **SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC** and to secure to all its citizens :

**JUSTICE**, social, economic and political;

**LIBERTY** of thought, expression, belief, faith and worship;

**EQUALITY** of status and of opportunity; and to promote among them all

**FRATERNITY** assuring the dignity of the individual and the unity and integrity of the Nation;

**IN OUR CONSTITUENT ASSEMBLY** this twenty-sixth day of November, 1949, do **HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.**