

BCSP-064

**BACHELOR OF COMPUTER APPLICATIONS
(BCA-Revised Syllabus)**

**BCA 6th Semester
BCSP-064
PROJECT GUIDELINES**



**SCHOOL OF COMPUTER AND INFORMATION SCIENCES
INDIRA GANDHI NATIONAL OPEN UNIVERSITY
MAIDAN GARHI, NEW DELHI – 110 068**

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MESSAGE FROM THE PROJECT CO-ORDINATOR

The Bachelor of Computer Applications (BCA) programme equips students with the skills necessary to pursue positions such as Programmers, Software Engineers, and Systems Designers in the fields of computer science, information technology, and IT-enabled services. Alternatively, students can choose to pursue higher studies in this area. In the BCA program, we have provided students with comprehensive knowledge that covers core areas of computer science, emphasizing both theory and practical application.

In their final semester, BCA students are strongly encouraged to fully engage in project work. It is advised that students develop projects aimed at solving software industry problems or addressing challenges faced by research organizations. This practical experience exposes students to real-life project development issues and provides them with valuable exposure.

The courses undertaken during the BCA programme provide students with a solid foundation to work across diverse application domains. The theoretical background acquired in various courses equips students with the necessary foundation, principles, and practices to develop effective solutions for computing problems. Practical courses provide hands-on experience, enabling students to work with different operating systems, programming languages, and software tools.

The inclusion of project work in the BCA programme offers students an opportunity to develop high-quality software solutions. Throughout the project development process, students are expected to be involved in all stages of the software development life cycle (SDLC), including requirements analysis, systems design, software development/coding, testing, and documentation. The primary focus of the project work is to understand and apply the principles of software engineering practices and gain a thorough understanding of the SDLC.

Students should approach the project work with utmost seriousness. The BCSP-064 project should be seen as an opportunity to develop software that exposes students to the SDLC. The selected topics should be complex and substantial enough to justify them as BCA projects. The projects should be genuine, original, and not copied from any other source. If any project is found to be copied, the project report will be forwarded to the Exam Discipline Committee of the University as an unfair means case, leading to appropriate action. Students are expected to strictly adhere to the guidelines provided for the BCSP-064 project.

I wish you all the success.

BCA COORDINATOR

Email: bca@ignou.ac.in

I. CALENDAR FOR THE PROJECT

<i>Sl.No.</i>	<i>Topic</i>	<i>Date</i>
1.	Submission of a Guide's bio-data and project proposal at the following address: The Regional Director of your Regional Centre	Twice a year as shown below: 1st April to 30th June or 1st October to 31st December
2.	Approval of Project	30 days after the project proposal is received.
3.	Submission of the Project Report (one copy) in bound form to: The Regional Director of your Regional Centre	Twice a year as shown below: 1st July to 30th September (For Project Proposal that have been approved during the 1st April to 30th June slot) or 1st January to 31st March (For Project Proposal that have been approved during 1st October to 31st December slot)
4.	Viva-Voce to be conducted	In July (For project reports submitted during 1 st January - 31 st March slot) In January (For project reports submitted during 1 st July – 30 th September slot)



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**II. PROFORMA OF BCA PROJECT PROPOSAL (BCSP-064)
(Project Title and Guides Details)**

Enrolment No: _____ **Regional Centre Code:** _____ **Study Centre:** _____

1. Name of Student: _____

2. Address of the Student : _____

3.(a) E-mail: _____ **3.(b) Telephone/ Mobile No.:** _____

4. Title of the Project : _____

5. Name of the Project Guide: _____ **5.(b) Designation of the Project Guide:** _____

6. Address of Project Guide: _____

7. Qualification of the Guide* (Attach bio-data of the Guide)

Ph.D.	M.Tech.	B.Tech.	MCA	Any other
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Note : i. All the above mentioned Degrees must have been awarded in Computer Science/IT only
 ii. A Guide should not guide more than 8 students of BCA at any point of time.*

8. Industrial / Teaching experience of the Guide (in Years)

9. Software Used for this Project:

*Note : 1. Use of Visual Basic and MS-Access as Front End and Back End respectively is forbidden. But, you are permitted to use Visual Basic with other Software. Also, you can use MS-Access with other software.
 2. The use of C or C++ programming languages is strictly prohibited for projects associated with database management.*

Signature of the Student
Date:

Signature of the Guide
Date:

Important:

1. Attach the Approved Proforma along with Guide’s Biodata and Project Synopsis in the Project Report.
2. Not more than one student is permitted to work on a project.
3. You should submit your Project Report only after incorporating the reformulations provided by the Evaluator.

For Office Use Only

Approved

Not approved

.....
Signature, Designation, Stamp of the
Project Proposal Evaluator
Date:

Suggestions for Reformulating the Project:

5

Ensure that you include the following while submitting the Project Proposal:

- 1. Proforma for Approval of Project Proposal duly filled and signed by both the student and the Project Guide with date.**
- 2. Bio-data of the project guide with her/his signature and date.**
- 3. Synopsis of the project proposal (12-15 pages).**
- 4. A self-addressed envelope with duly affixed postage stamps (to send it by ordinary post only) on it.**

A photocopy of the complete Project Proposal (along with Project Proforma, Project Synopsis, Biodata of the guide) submitted to your Regional Centre, should be retained by the student for future reference.



III. GUIDELINES FOR PROJECT FORMULATION

The project work constitutes a major component in most of the professional programmes and it is to be carried out with due care and should be executed with seriousness by the candidates.

TYPE OF PROJECT

As majority of the students are expected to work out a real life project in some industry/research and development laboratories/educational institutions/software companies, it is suggested that the project is to be chosen which should have some direct relevance in day-to-day activities of the candidates in his/her institution. Students are encouraged to work in the areas listed at the end. However, it is not mandatory for a student to work on a real life project. The student can formulate a project problem with the help of Guide.

PROJECT PROPOSAL (SYNOPSIS)

The project proposal should be prepared in consultation with your guide. The project proposal should clearly state the project objectives and the environment of the proposed project to be undertaken. **The project work should compulsorily include the software development.** The project proposal should contain complete details in the following form:

1. Title of the Project
2. Introduction and Objectives of the Project
3. Project Category (RDBMS/OOPS/Networking/Multimedia/Artificial Intelligence/Expert Systems etc.)
4. Analysis (DFDs at least up to second level , ER Diagrams/ Class Diagrams, Database Design etc. as per the project requirements).
5. A complete structure which includes:
 - Number of modules and their description to provide an estimation of the student's effort on the project work.
 - Data Structures as per the project requirements for all the modules.
 - Database Design
 - Process Logic for each module
 - Testing Details
 - Reports Generation (Mention tentative content of the report)
6. Tools / Platform, Hardware and Software Requirement specifications
7. Are you doing this project for any Industry/Client? Mention Yes/No. If Yes, Mention the Name and Address of the Industry or Client
8. Future scope and further enhancement of the project.

Note: You are advised to hear to Audio and watch Video Programmes available on IGNOUSOCISYoutube Channel. The list of reference links are provided on page number 17.

IV. PROJECT PROPOSAL SUBMISSION AND APPROVAL

After finalising the topic and the selection of the guide, students should send the Project Proposal Proforma given on page no. 6 along with the synopsis and bio-data of the guide to The Regional Director of the Regional Centre concerned. Incomplete project proposals in any respect will be summarily rejected.

COMMUNICATION OF APPROVAL

Communication regarding the Approval / Non-approval of the project will be sent to you within four weeks after the receipt of the project proposal by the Regional Centre concerned.

RESUBMISSION OF THE PROJECT PROPOSAL IN CASE OF NON-APPROVAL

In case of non-approval, the suggestions for reformulating the project will be communicated to you. The revised project synopsis along with a new Proforma, should be re-submitted along with a copy of the earlier synopsis and non-approval project proposal Proforma in the **next slot**. For example, if the student submitted the synopsis during the 1st April to 30th June slot and is not approved due to some reasons, s/he is eligible to resubmit the revised project synopsis only during the next slot i.e., 1st October to 31st December. These guidelines are applicable for earlier batch students also whose project work is pending.

ELIGIBILITY OF PROJECT GUIDE

1. A person having Ph.D./M.Tech. in Computer Science.

OR

2. A person having B.E/B.Tech (Computer Science), MCA, M.Sc (Computer Science) with minimum 2 years experience in Teaching/Industry.

V. PROJECT REPORT FORMULATION

ITEMS TO BE INCLUDED IN THE PROJECT REPORT

The following items should be included in the Project Report:

1. The project report must contain the following:
 - ◆ Introduction
 - ◆ Objectives
 - ◆ Tools/Environment Used
 - ◆ Analysis Document (This should include SRS in proper structure based on Software Engineering concepts, E-R diagrams/Class diagrams/any related diagrams (if the former are not applicable), Data flow diagrams/other similar diagrams (if the former is not applicable), Data dictionary)
 - ◆ Design Document (Modularization details, Data integrity & constraints including database design, Procedural design, User interface design)
 - ◆ Programme code (Complete code (well indented)/Detailed specification instead of code*, Comments & Description. The programme code should always be developed in such a way that it includes complete error handling, passing of parameters as required, placement of procedure/function statements as needed.)
 - ◆ Testing (Test case designs are to be included separately for Unit testing, Integration testing, System testing; Reports of the outcome of Unit testing, Integration testing, System testing are to be included separately. Also, details of debugging and code improvement are to be included.)
 - ◆ Input and Output Screens
 - ◆ Implementation of Security for the Software developed (In case, you have set up a User Name and Password for your software, you should ensure the security of User Name and Password during transmission to server)
 - ◆ Limitations of the Project
 - ◆ Future Application of the Project
 - ◆ Bibliography

*Students who have done their project for any organization are permitted to attach detailed algorithm/specification instead of code, in case, the organization doesn't permit them to attach the code. Student needs to attach letter in the project report from the Project Manager of the project in the organization that they are not permitting student to attach the code. In the absence of such letter, the student needs to attach the code compulsorily.

The project report should be hard bound; should consist of a **Contents** page; all pages of report should be numbered; content should be well organized in a meaningful manner; printouts of text & screen layouts should be original and should not be xeroxed)

2. **Original copy of the Approved Project Proposal Proforma, Synopsis and Guide's Bio-data.**
3. **Certificate of Originality (Format given on page no. 13).**
4. **The Project Report may be about 50 to 80 double spaced A-4 size typed pages (excluding programme code). However,10% variation on either side is permissible.**

SUBMISSION OF PROJECT REPORT

Only one copy of the project report is to be submitted to the following address by registered insured post: **Regional Director, Concerned Regional Centre** by the date mentioned in the Calendar for the project (refer to page-3).

TYPE OF THE PROJECT

The majority of the students are expected to work on a real-life project preferably in some industry/ Research and Development Laboratories / Educational Institution / Software Company. Students are encouraged to work in the areas listed at the end (Refer page no.15). However, it is **not mandatory** for a student to work on a real-life project. The student can formulate a project problem with the help of her/his Guide and submit the project proposal of the same. If approved, the student can commence working on it and complete it.

PROJECT EVALUATION

The **Project Report** is evaluated for 150 marks and the **Viva-Voce** is for 50 marks. To be declared successful, the student should secure at least 40% marks separately in both project report evaluation (i.e.60/150) and viva-voce (i.e.20/50). Students will be duly intimated about the schedule of viva-voce by a letter from the respective Regional Centre. An unsuccessful student can either submit the same project after following comments on the assessment sheet or s/he can do a different project. Always, ensure that the BCSP-064 project guidelines are followed.

Unfair cases of copied versions of the project synopsis and project reports will be sent to Unfair Means Committee of IGNOU for action.

RESUBMISSION OF THE BCA PROJECT IN CASE OF FAILED STUDENTS

If the student is unsuccessful in the project, s/he should „re-do“ the whole cycle, right from the submission of the project synopsis. Students are advised to select a new topic for the project and should prepare and submit the project synopsis to the Regional Centre concerned as per the project guidelines. There are no separate slots for the submission of the project synopsis / project reports for the failed students. Respective submissions of the project synopsis and the project reports should be done strictly as per the “Calendar for the BCA project” given in the project guidelines. Along with the resubmission of the project report, the student is required to remit the pro-rata fee (subject to change as per university rule – contact your concerned Regional Centre for necessary update). The fee should be remitted to the Regional Centre at the time of resubmission of the project report by the way of Demand Draft favouring IGNOU and payable at the city where your Regional Centre is located.

ENQUIRY

Enquiries regarding the Project Report and Viva-Voce should be addressed to the **Regional Director, Concerned Regional Centre**. In all communications, please mention your Enrolment No.

VI. IMPORTANT POINTS WHILE PREPARING THE PROJECT REPORT

1. The Project Report should be submitted in A-4 size typed in double space. The Project Report should be hard bound.
2. Ensure that it contains the following:
 - Project Proposal Proforma. All the items should be filled. The signatures of both student and Guide should be present.
 - Project Synopsis. Both Guide and student should sign on the Project Synopsis.
 - Guide's Bio data. The Biodata should consist of signature of the Guide.
 - Certificate of Originality (Format given on Page no.13)
 - All signatures should be accompanied by the date of signature.

It should include all items mentioned in Section IV.
3. **If any project report is received in the absence of the items listed above, it will be rejected and returned to students for compliance. Also, violation of Project Guidelines may lead to rejection of the Project.**
4. **Only One hard bound original copy** of the project report is to be submitted to „The Regional Director, Concerned Regional Centre“ by registered insured post. **One copy of the same Project Report is to be retained with the student and the student is supposed to carry his copy while appearing for viva voce. Spiral binding of Project Report is not permitted.**
5. Xerox copy of the project report is not acceptable.
6. Not more than one student is permitted to work on a Project.
7. If the title of the Project differs from the title mentioned in the Project Proposal, the Project Report will be rejected and will be returned back to the student.
8. Kindly mention on the top of the envelope **“BCA PROJECT REPORT (BCSP-064)”**. This will facilitate sorting out project reports at the Regional Centre.
9. The envelope containing the remuneration form for the Project Guide duly signed by the Guide and the student, should be sent to “Regional Director, Concerned Regional Centre.”
10. In case, students require any letter from the University for doing a project in any organization, they may request the Regional Director of the concerned Regional centre for the issuance of the same in the format indicated under **Project Trainee** in this document. (Refer to Page number : 15).

VII. LIST OF BROAD AREAS OF APPLICATION AND RELATED TOOLS

FRONT END / GUI Tools	Visual Basic, Power Builder, X-Windows (X/lib,X/motif, X/Intrinsic), Oracle Developer 2000, VC++, Jbuilder
LANGUAGES	Java, VC++, C#, Python, Kotlin, Objective-C, Swift, React, Angular, Rust, Scala, Ruby, Flutter, React Native
SCRIPTING LANGUAGES	PERL, SHELL Scripts(Unix), Tcl/TK
RDBMS/BACK END	Oracle, Ingres, Sybase, Progress, SQL Plus, Versant, MY SQL, SQL Server, DB2 etc..
BACKEND FOR MOBILE APPs	Firebase, SQLite, MongoDB, MariaDB, IBM Db2, HBase, Firebird, ArangoDB, Apache Casandra, Neo4j, OrientDB etc..
MIDDLE WARE(COMPONENT) TECHNOLOGIES	COM/DCOM, Active-X, EJB, Rational Rose, MSMQ, BEA, Message Q, MTS, CICS
UNIX INTERNALS	Device Drivers, Pipes, RPC, Threads, Sockets
ARCHITECTURAL CONCEPTS	CORBA, TUXEDO
INTERNET TECHNOLOGIES	DHTML, Java script, VB Script, Perl & CGI script, HTML, Java, Active X, RMI, CORBA, SWING, JSP, ASP, XML, EJB, Java Beans, Java Servlets, Visual Age for JAVA, UML, VRML, WML, iPlanet, ATG, BigTalk, CSS, XSL, Oracle ASP server, VB.Net, AWT, J2EE, LDAP, ColdFusion etc..
NETWORKING TECHNOLOGIES	ATM, Frame Relay, TCP/IP, SNMP, GSM, VoIP, PPP, IP-PSTN, SONET/SDH etc..
WIRELESS TECHNOLOGIES	Blue Tooth, 3G, ISDN, EDGE, Mobile Apps etc..
REALTIME OPERATING SYSTEM/ EMBEDDED SKILLS	QNX, LINUX, OSEK, DSP, VRTX, RTXC, Nucleus
OPERATING SYSTEMS	WINDOWS 10/11, WINDOWS NT, UNIX, LINUX, IRIX, SUN SOLARIS, HP/UX, PSOS, VxWorks, AS400, AIX etc.
MOBILE OPERATING SYSTEMS	Android, iOS, webOS, Windows 10 Mobile, watchOS etc.
APPLICATIONS	Financial/ Manufacturing/ Multimedia/ Computer Graphics/ Instructional Design/ Database Management System/ Internet/ Intranet/ Computer Networking- Communication Software/E-Commerce/ ERP / MRP/ TCP/IP Internals/ Routing protocols/ Socket Programming/ Implementation of Switches & Routers/Mobile Applications /AI Applications etc.

Note: Projects should not be developed using the packages like Dbase, Foxpro, Visual Foxpro, MS-Access, C and C++. Also, projects should not be developed using the combination of Visual Basic as the front end and MS-Access as the backend. Student should be innovative in each and every phase of project development. **Student should do coding by himself/herself. Students have the flexibility to utilize cutting-edge tools, programming languages, and technologies for their software development, even if they are not mentioned above or included as part of their project development.**

VIII. REMUNERATION FORM FOR THE BCA (BCSP-064) PROJECT GUIDE



**INDIRA GANDHI NATIONAL OPEN UNIVERSITY
MAIDAN GARHI, NEW DELHI – 110068**

REMUNERATION BILL FOR THE BCA PROJECT GUIDE

1. Course Code : **BCA (BCSP-064)**
2. Name of the Guide : _____
3. Residential Address : _____

4. Designation : _____
5. Office address : _____

This is to certify that I have Guided the following student/(s) for their project work:

S.No	Enrolment Number of the student	PR No. (to be filled by the Regional Centre)	Name of the student	Title of the Project	Amount Claimed

Signature of the Guide

Date :.....

NOTE: Project guide cannot guide more than eight students in any given point of time. This form duly signed by the guide placed in a separate envelope, should be submitted along with the project report. Remuneration Bill not accompanied with the project report will not be considered for payment. For BCSP-064(8 Credits) course, the remuneration to the project guide (for guiding one project) is as per the university norm.

FOR USE IN THE EXAMINATION BRANCH

Registrar (SR&ED)

Verified by Dealing Asstt.

FOR USE IN FINANCE BRANCH

Passed for payment of Rs. : _____

Debit Head: Examination _____

: Contingent _____

: T.A. _____

Dated : _____

Section Officer / A.R. (Accounts)

Dealing Asstt.

Paid by Cheque No. _____

Dated _____

Assistant Registrar

IX CERTIFICATE OF ORIGINALITY

This is to certify that the project report entitled _____
submitted to **Indira Gandhi National Open University** in partial fulfilment of the requirements
for the award of the degree of **BACHELOR OF COMPUTER APPLICATIONS (BCA)**, is
an original work carried out by Mr./ Ms. _____
Enrolment No.: _____ under the guidance of Mr./ Ms. _____

The matter embodied in this project is a genuine work done by the student and has not been
submitted whether to this University or to any other University / Institute for the fulfilment of the
requirement of any course of study.

Signature of the Student

Signature of the Guide

Name and Address
of the student :

Name, Designation and
Address of the Guide

Enrolment No.:



School of Computer and Information Sciences
INDIRA GANDHI NATIONAL OPEN UNIVERSITY
Maidan Garhi, NEW DELHI – 110068

X. PROJECT TRAINEE LETTER

Date:

Subject: Project Trainee

Sir,

This is to certify that Mr / Ms _____ whose Enrolment No. _____ is a student of BCA Programme of Indira Gandhi National Open University and has to do a project in his/her final year starting from January / July session. The project is compulsory for BCA programme. S/he has to do a project for 3-6 months in Industry/Research Laboratories under the supervision of a guide preferably from the same organization. During his course, the student has studied several theoretical papers such as Data Structures, Database Management System, Programming Languages (C, C++, and Java), TCP/IP Programming, Intranet Administration, Computer Networks, Software Engineering etc. The student also attended practical sessions in all courses in which practical sessions were prescribed.

Looking forward for your positive response.

**Signature & Name of Project Coordinator
with Date and Stamp**

Note: This letter may also be signed by Regional Director / Asst. Regional Director of Regional Centre concerned.

List of Videos and Audios Web Link

Videos Web References:

1. Module - I : Problem Identification for Project
(<https://www.youtube.com/watch?v=7-qUE1ycCw>)
2. Module - II : Components of Project Synopsis
(<https://www.youtube.com/watch?v=GXaf7rnhlTY>)
3. Module - III : Preparing Project Report
(<https://www.youtube.com/watch?v=GXaf7rnhlTY>)
4. Module - IV : Preparation for Viva-Voce
(https://www.youtube.com/watch?v=zjUSD4X_39c)

Audios Web References:

1. Module - I : Problem Identification and Tool and Platform Selection
(<https://www.youtube.com/watch?v=7MtqyCZtvxk&t=10s>)
2. Module - II : Analysis and Design Documentation for Project Synopsis
(https://www.youtube.com/watch?v=b_VFgjaCKIo)
3. Module - III : Preparation of Project Report
(<https://www.youtube.com/watch?v=fOeqr2kvWko>)
4. Module - IV : Viva-Voce of Project
(<https://www.youtube.com/watch?v=LvsliKD6J50>)