B.Sc. Computer Science (Online)

Students Orientation on Study Project

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About Project Type Courses | Courses

- The project courses provide hands-on experience in developing software solutions for real-world problems, with students identifying and formulating a suitable problem within the scope.
- Students work in collaborative teams, responsible for the entire software development lifecycle under the guidance of expert mentors , simulating a real-world development environment
- The project is divided into several phases, each with specific deliverables

About Project Type Courses | Courses

Course Number	Course Title	Units
BCS ZC241T	Study Project	5
BCS ZC428T	Project	10

Fifth Semester		Sixth Semester	
Sw. Development Practices	Study Project (5U)	Project (10 U)	
Disciplinary Electives #2 & Disciplinary Electives #3	Network Programming & Client Server Prog.	Discipline Elective #4	Foundation Option

Study Project | Objectives

BCS ZC241T - Study Project (5U)	
Duration	12 Weeks (Including Assessment) (5th Semester, Term 2)
Objectives	• Identify a real-world problem that requires a software solution and clearly formulate the problem statement. • Develop a structured Software Requirements Specification (SRS) defining functional and non-functional requirements. • Design detailed system architecture to establish a clear development blueprint.

Study Project | Phases in Study Project

Phase #	Duration	Objective	Deliverables	Evaluation Criteria
1	1-2	Define the project idea, scope, and feasibility with clear goals.	Two page document on Project Idea, Scope and Feasibility (Template to be provided)	Clarity (Objectives & Outcomes), Nature and quality of problem identified
2	3-6	Understand project requirements, define scope, tools stack, and identify key deliverables.	Software Requirements Specification (SRS) Document (Template to be provided)	Completeness & correctness of the SRS doc, Realistic project timeline & scope, Justification for chosen tools and technologies.
3	7-10	Develop a blueprint for system arch	Architecture Diagrams, Technical Design Document	Quality of overall proposal (project , design)
4	11-12	Evaluation	Completed design document & Presentation	

Study Project | People Involved & Roles

1

You (Group):

- You will interact with your classmates and make a group (of upto 4 students)
- Group of 4 students is recommended.
- In case you are working as a smaller group (including the case of working alone), there will be no change in the expectation from the course from the evaluation standpoint.

2

Your Mentor:

- You will be assigned a mentor experienced in software development to guide you throughout the course.
- Your team will have weekly meetings with the mentor via Google Meet for guidance and feedback.
- While the project ideas are your own, the mentor will provide direction on technical aspects, processes, and perspectives to help improve your approach.

Study Project | People Involved & Roles

3

Lead Instructor:

- Leads the course, manages overall operations, finalizes grades, and has the authority to resolve any issues.
- Monitors project progress by regularly meeting mentors and reviewing student reports.
- Provides templates, assessment timelines, and guidelines for project deliverables.

4

Examiner:

- Evaluates your project through reports, presentations, and other assessments.
- Assigned by the Lead Instructor to ensure fair and thorough evaluation.

Study Project | Working as a Team

- Identifying a Team
  - Engage with classmates to find team members with complementary skills (e.g., programming, design, documentation)
  - Discuss project interests, strengths, timelines for regular sync-up
  - Commitment to work and contribute throughout the project courses
- During the project
  - Create a Google Space (inside your official google mail) for internal team communication and collaboration.
  - Use it to share updates, track progress, discuss ideas, and assign tasks.
  - Be regular to attend meetings with mentor, assessments etc.
- Requirements & Recommendations
  - Define clear roles and responsibilities for each team member.
  - Maintain open and respectful communication to address challenges early.
  - Stay consistent with weekly meetings and meet deadlines as a team.
  - Support each other and work towards a shared goal for successful project completion.

Study Project | On Assessments

- All Project Courses are non-letter graded
  - Excellent, Good, Fair and Poor
  - NC - Not Completed, if fail to meet project course requirements
  - Your CGPA does not change with the grades obtained in project type courses
- Three assessments
  - For Phase -1 - Evaluation during 3rd week - to be conducted by mentor
  - For Phase -2 - Evaluation during 7th week - to be conducted by mentor
  - For Phase-3 - Evaluation during 11, 12th week
    - Final Presentation - before the panel that includes examiner & your mentor
  - Lead Instructor to finalize the grade taking into account your assessments in Phase-1, Phase-2 & Phase 3
- Templates for deliverables
  - To be shared with you at the beginning of the term, through the portal

Study Project | Important Notes

Important Note #1:

- You will continue working in the same team to in the 6th semester to implement your proposal
- Changes in this will affect your progress in the progress.
- Hence strong commitment within the team is required to work together.

Important Note #2:

- About ~16 hours of commitment is expected throughout the project course for the project courses alone.
- Stay committed, motivated, help each other & work as a team

Study Project | Nature of Projects / Areas (1)

- The chosen project *must align with the core themes of computer science covered in the B.Sc. CS* program, *ensuring relevance and applicability*.
- The learners are *recommended to develop software solutions for problems following the software development principles and practices in the process of software development*.
    - *Each team is responsible for identifying a problem to solve*. A sample list of project titles, descriptions, and relevant courses is provided for reference.
    - Teams must propose a problem and *can consult mentors for formalizing the problem statement and preparing the final proposal*.
    - Students are *encouraged* to identify real-world problems from industry needs, everyday consumer challenges, local businesses, data-driven opportunities and socially impactful projects.

Study Project | Nature of Projects / Areas (2)

- Broad Areas of the projects are the following
  - Software Application Development [Applications involving web, mobile and database applications]
  - Systems and Systems Programming [Applications involving systems programming, OS, Networks etc]
  - Database applications (with Data Analytics)
  - Algorithmics & Theoretical Computer Science

Study Project | Project Selection Guidelines (1)

- Problem Identification
  - Identify problem from surrounding that can be solved with software
    - should be well-aligned with broad areas of BSc CS programme
    - should apply concepts learned in coursework and demonstrate practical understanding
  - Observe alternative solutions available for the problem
  - Compare existing solutions to find gaps in them which can be addressed by you soulution
  - Refer to sample project titles and descriptions for reference [Link to access]
  - Innovative projects (e.g., using AI, IoT, Blockchain) are encouraged but should be practical to implement

Study Project | Project Selection Guidelines (2)

- Complexity and Feasibility
  - Confirm whether the problem is really solvable by software
  - Select project that is challenging enough but achievable within the available time and resources
  - Identify the tech-stack required for the solution design and development
    - Make sure the necessary software, hardware, and datasets etc. are readily available
    - Opt for open-source tools and platforms to reduce availability constraints and costs
  - Make sure you are familiar with certain components of the tech-stack
    - If not, consider whether you can develop necessary skills within the project duration
  - Ensure to have access to all required resources to solve the problem

Study Project | Project Selection Guidelines (3)

- Clear Objectives and Scope
  - Define a specific problem statement and clear goals for the project
  - Avoid overly broad or vague topics—ensure the scope is well-defined and manageable
  - Research-oriented projects should have a strong theoretical foundation and scope for further exploration
  - Consider whether the project can be extended for internships, competitions, or further research

- Ethical and Legal Considerations
  - Ensure compliance with data privacy and ethical computing standards
  - Avoid using proprietary or confidential data without permission

Study Project | Assessment

Team of Instructors

Lead Instructors (On-campus / Off-campus Faculties)				
Mentor-1	Mentor-2	Mentor-3	….	Mentor -n
Teaching Assistants (2 , work closely with Lead Instructor)				

Assessment Plan

Phase #	Who evaluates?	When	Weightage (internal)	Grades
1	Mentor	3rd Week	20%	Non-letter grades Excellent Good Fair Poor NC
2	Mentor	7th Week	30%	
3	Mentor + External Examiner	11,12th Week	50%	

Study Project | Notes on Final Assessment

- Each group will deliver a final presentation before a panel consisting of:
  1. Examiner (a mentor assigned to another group within the same batch, designated by the Lead Instructor)
  2. Mentor
- The examiner will assign the final non-letter grade and submit it to the Lead Instructor.
- If there are any grievances or conflicts regarding the assessment, the Lead Instructor has the authority to resolve them. {For Ex: Referring to a second examiner if required }
- The Lead Instructor will be responsible for submitting the final grades for the course.

Study Project | Tasks Now

- Collaborate to form groups (immediate)
  - Now collaborate among yourself to form the groups of (maximum) 4
  - Use the shared Zoom links for the collaborations
  - Discuss in online / offline format to discuss and identify the problem statement

- Groups registrations (next 10 days - by 31st March)
  - Designate one member as Team Lead
  - Submit one registration per entry in the prescribed Google form

- Next interaction (tentatively mid of May)
  - To convey all three phases of study project, elaborate on the process and deliverables

Study Project | Point of Contact

- For any further queries
  - First ensure you have read through all the documents
  - Then only reach out to the projects@online.bits-pilani.ac.in

Thank you

Details of Phases involved in Study Project (5U) Course

Study Project | Phase-1 (Weeks 1-2)

- Goal:
  - Formalize the project idea, define clear objectives, outline a plan, and get approval for moving forward.

- Activities:
  - Conduct brainstorming and ideation sessions with team members.
  - Perform research on existing systems or solutions.
  - Perform Preliminary research is done to gather functional and non-functional requirements
  - Outline clear objectives for the project, specifying what the final software will achieve
  - A thorough analysis to determine whether the project is achievable within the given timeline and with available resources
  - Identify possible risks and challenges such as technical difficulties, team collaboration issues, or potential delays

- Deliverables:

[2 page initial document containing - Template to be provided]

  - A well-defined project proposal that outlines the key deliverables
  - Clear alignment of the project with course objectives, ensuring the project challenges students to apply their software engineering skills.

Study Project | Phase-2 (Weeks 3-6)

- Goal:
  - Understand project requirements, define scope, and identify key deliverables.

- Activities:
  - Conduct brainstorming sessions with team members.
  - Conduct surveys or interviews with potential users.
  - Write a Software Requirements Specification (SRS) document.
  - Finalize the project scope and high-level features (use case diagrams, user stories).
  - Finalize project tools and technologies.

- Deliverables:
  - SRS Document [Template to be provided]
  - Project plan with timelines and milestones
  - Roles and responsibilities assigned to team members.

Study Project | Phase-3 (Weeks 7-10)

- Goal:
  - Create a blueprint of the system architecture.
- Activities:
  - Develop System Architecture (e.g., client-server, microservices).
  - Design database schema (ER diagrams), if required
  - Create wireframes and prototypes for the user interface (UI/UX), if required
  - Identify classes, modules, and interfaces, if required
  - Plan APIs and integration points.
  - Conduct design reviews.
- Deliverables:
  - Architecture Diagram
  - Database Design(if applicable)
  - UI/UX Wireframes and Prototypes (if applicable)
  - Technical Design Document [Template to be provided]