Detailed Program Scheme

Bachelor of Technology (B.Tech.)

(Computer Science Engineering)

Semester I-VIII

(2023-2027)

DOC202306090061

RNB GLOBAL UNIVERSITY

RNB Global City, Ganganagar Road,
Bikaner, Rajasthan 334601

Document Release Notice	
Program Scheme for all Semesters	
Release: Version 1.0	
Name of Program	Bachelor of Technology (Computer Science Engineering)
Abbreviated Program Name	B.Tech. (CSE)
Updated on	June 2024
Approved By	BOS

OVERVIEW

RNB Global University follows Semester System. Accordingly, each academic year is divided into two semesters, **Odd (July-December) and Even (January-June).** Besides this, the university follows a system of continuous evaluation along with regular updating in course curricula and teaching pedagogy.

Course Scheme

Name of Program	Bachelor of Technology (Computer Science Engineering)
Duration of Program	4 years
Number of Semester	8
Total Credits of Program	214

DETAILED CREDIT STRUCTURE

Year 1	Semester I	27 Credits
	Semester II	28 Credits
Year 2	Semester III	29 Credits
	Semester IV	28 Credits
Year 3	Semester V	31 Credits
	Semester VI	26 Credits
Year 4	Semester VII	25 Credits
	Semester VIII	20 Credits
Total Credits		214 Credits

PROGRAM OBJECTIVE

1. Graduate will establish himself/herself as effective professionals by solving real world problems using investigative and analytical skills along with the knowledge acquired in the field of Computer Science and Engineering.
2. Graduate will demonstrate his/her ability to adapt to rapidly changing environment in advanced areas of Computer Science and scale new height in their profession through lifelong learning.
3. Graduate will prove his/her ability to work and communicate effectively as a team member and /or leader to complete the task with minimal resources, meeting deadlines.
4. Graduate will embrace professional code of ethics in the profession while deliberately being part of projects which contributes to the society at large without disturbing the ecological balance.
5. Graduate will demonstrate the critical thinking and communication skills required in a technical environment.

DURATION OF THE PROGRAM/MAXIMUM DURATION

The B.Tech Program shall be of four years with eight semesters. A student will be required to complete the program within minimum 4 years and maximum a duration of 6 years from the date of first registration in the first Semester.

The student shall be required to undergo 5-6 weeks Summer Internship at the end of the Second year (4th Semester) & submits its report in the 5th Semester..

An academic year consists two semester, Odd Semester (July-Dec) and Even Semester (Jan-

June). Duration of Each semester can increase or decrease. Generally each semester has 15-18 weeks of academic works.

The examination for the Ist, IIIrd, and Vth, VIIth semesters shall ordinarily be held in the month of November/December and of the IInd, IVth ,VIth and VIIIth semesters in the month of April/May or on such dates as may be fixed by the University.

REGISTRATION AT THE START OF EVERY SEMESTER

Every semester, students admitted to a program should register him/her for the next Semester. The student must also register for the elective courses, if any, (both discipline specific and open electives) that he/she wishes to take in that particular semester (especially in the final year/last 2 semesters).

PROMOTION FROM 1ST YEAR TO 2ND YEAR

A student is eligible for promotion to next year, if he/she meets the below mentioned minimum CGPA Criteria (by combining odd and even semester).

- For promotion from 1st Year to 2nd year , Minimum CGPA of 4.0
- For promotion from 2nd Year to 3rd year , Minimum CGPA of 4.5
- For promotion from 3rd Year to 4th year , Minimum CGPA of 4.5

Meaning: If for a Student, if CGPA is 4.0**(Minimum 40% marks are required to get promoted)** or more than 4.0 in 1st year having any number of subject backlog/fail, he/she shall be promoted to next year. That it is his/her choice to clear his/her backlog is summer semester or with semester end examination as per ODD backlog with ODD semester and EVEN Backlog in EVEN Semester.

If student CGPA is less than 4.0, having any number of backlog in the 1st year and CGPA is less than 4.5 in 2nd year, he/she must be appear in summer semester to clear backlog papers.

For promotion to 3rd Year, a student must have to clear all his/her paper of 1st year. Student cannot carry internal backlog to next year, he/she must clear his/her internal backlog before commencement of next year session.

TEACHING PEDAGOGY

At RNB Global University the teaching pedagogy includes

- Teaching on white board,
- Explanation of scientific facts using power point presentation,
- Webinars,
- Seminars,
- Class room assignments,
- Home assignments,
- Quiz,
- Guest lectures,
- Activities

The University has a large library which includes thousands of books, along with digital library support through which students as well as faculties can approach national and international books and research journals so as to be updated with latest technologies and emerging scientific trends.

In the networking world of today, communication skills are becoming very important. A manager's main role is to communicate his/her vision and strategy to others and get them

to work with him/her towards that vision. RNBGU places special importance on the communication and interpersonal skills of students by imparting subjects like 'Ability & Skill Enhancement'.

CONTINUOUS ASSESSMENT

Continuous assessment means assessing aspects of students' knowledge and understanding throughout their course as opposed to a final examination. Continuous assessment looks at the student's overall capabilities in the form of regular assignments. It provides a more accurate and complete picture of the student's level and their understanding of what they have learned. Each assignment has original content based on a particular module or subject area and is evaluated by an expert coach. This allows the student to constantly and consistently demonstrate their level of knowledge which cannot be accomplished with a final examination alone. The continuous assessment of a student is accomplished by

- Regularity of student in classroom
- Class room assignment
- Home assignment
- Projects
- Experiments performed in the laboratories
- Maintenance of practical record book
- Presentations on course topics
- Overall behaviour towards classmates and faculty
- Participation in extracurricular activities

Students can refer to the semester/year wise "Program Assignment chart" to get a better idea on the format/style & number of assignments they need to take in a particular semester/year. The assignments are designed in such a way that helps in the holistic growth of the students along with creating confidence & bettering the communication skills.

ASE- ABILITY AND SKILL ENHANCEMENT

Ability and Skill Enhancement (ASE) is the umbrella under which various spikes like training modules on communication skills, business etiquettes, technical terminology, vertical study, understanding requirements of various specializations and many such topics are taught which render in helping the students prepare for the Global Entrant. ASE has been conceptualized with a view to explore the dynamics and techniques of effective interpersonal communication and to reinforce confidence in students by concentrating on what works about the individual. We believe that students need to not only develop academically, but develop the ability to survive in the modern world.

Aim of ASE is:

1. To convert the conceptual understanding of communication into everyday practice and to train students to apply concepts/ideas in their own experience.
2. To create a learner-language interface enabling students to exercise control over language use.
3. To exercise control over language use and sensitize students to the nuances of the four basic communication skills – Listening, Speaking, Reading and Writing.
4. To give them the skill sets that would help them grow professionally.

Along with imparting education and academic proficiency to students, we prepare them for situations beyond academics also. Inclusion of co-curricular and extracurricular activities under ASE is facilitating a comprehensive development of students. ASE focuses on body language, communication interpersonal and presentation skills by teaching them the art of developing, creating and executing their presentation with a professional approach and attitude.

ASE Modules I To VIII are specifically designed so as to gradually increase the learning approach of the student, helping students train their mind keeping themselves in the realistic world. It enables a student to develop key professional qualities.

ASE helps in achieving the University's mission to promote 'True Learning' and discourage 'Rot Learning'. Use of tutorials, assignments, debates, quizzes, presentations, case studies, projects, practical test, viva voce and many more modern tools promotes the learning quotient among the students.

This is one of the exclusive features of RNBGU's skill enhancement efforts.

WORKSHOPS & SEMINARS

The students attended workshop and seminar on their respective field or subject will gain knowledge and develop new ideas in their fields. They will improve their skills in practical and also in experimental analysis. It is also helpful for the students to improve in their communication skills as well as in personality development. They will be able to learn about the basic features of Machines and Equipment by doing hands on practice to their related software.

Seminars offer students the opportunity to interact with top industry leaders, experienced business managers, entrepreneurs, venture capitalists, and small-business owners. Designed to introduce students to different aspects of business and industry, the series also includes information on career opportunity and development. A post-seminar interaction allows students to talk one-on-one with speakers and network with their peers.

Workshops allow students to further develop marketable business skills in an intensive, interactive environment. Topics are selected through input from industry, program administrators, and students.

This is one of the key features of RNBGU's learning pedagogy.

SUMMER INTERNSHIP

- Internship is the best option to develop skills and experience in particular field which is dependent on student choice or company according. Basically, the internship is a first stage to learn the technical language (Java, Android, PHP, Web designing, .Net, SEO) which is beneficial for student.
- Internships are key to building experience as a student or recent graduate. Employers are much more likely to hire someone with internships and work experience rather than someone with a generic resume, lacking experience.

Some specific reasons to include internships in B.Tech, is follow: Real world experience, Networking, Resume Builder, Time Management, and Career Foundation.

Internships are taken after the end of the 4th semester and 7th Semester for a period of 4-5 weeks. It carries 6 credits & the student needs to submit his/her Summer Internship Report in the 5th semester and 7th Semester. For the ease of students understanding, summer internship is evaluated for a total of 150 marks for Weekly Reports, Project Report, and Presentation & Viva Voce & later converted into grade & grade points as per the University Examination Policy.

Complete document/guidelines are available for the help/assistance of the students for SIP. **Students can refer to the B.Tech Summer Internship & Project Instructions & Assistance Document**" to get a better idea on the Formats, Style, Project reports, Marks breakup & scoring criteria, etc ;enabling students a better perspective &understanding on benefiting the maximum from such dedicated & sincere efforts by RNB Global University for organizing such Summer Internship program for its students.

The complete SIP reporting & evaluation pattern is again a very unique &well-structured industry academia learning efforts of RNBGU.

SEMESTER WISE COURSE DETAILS

Semester –I

S. No.	Course Code	Course Name	L	T	P	Credits
1.	19002200	Introduction to Programming with C	3	0	0	3
2.	19002300	Programming with C Lab	0	0	2	1
3.	19000800	Electronics and Electrical Technology	3	1	0	4
4.	19000900	Electronics and Electrical Technology Lab	0	0	2	1
5.	19000600	Manufacturing Processes	1	0	0	1
6.	19000700	Manufacturing Process/WorkshopLab	0	0	2	1
7.	19000100	Applied Mathematics- I	3	1	0	4
8.	19000200	Applied Physics-I	3	1	0	4
9.	19000300	Applied Physics-I Lab	0	0	2	1
10.	19001100	Ability & Skill Enhancement - I	2	0	0	2
11.	99002200	Business Communication	3	1	0	4
12.	99003300	Workshops / Seminars/ Human Values / Social Service/NCC/NSS	-	-	-	1
Total			**18**	**4**	**8**	**27**

Semester –II

S. No.	Course Code	Course Name	L	T	P	Credits
1.	19001800	Applied Mathematics-II	3	1	0	4
2.	19001900	Applied Physics-II	3	0	0	3
3.	19002000	Applied Physics Lab-II	0	0	2	1
4.	19002100	Engineering Graphics	3	0	0	3
5.	19002500	Engineering Graphics lab	0	0	2	1
6.	19000400	Applied Chemistry	3	1	0	4
7.	19000500	Applied Chemistry Lab	0	0	4	2
8.	19002400	Basic Mechanical Engineering	3	0	0	3
9.	99001900	Environmental Studies	3	1	0	4
10.	19001100	Ability & Skill Enhancement - II	2	0	0	2
11.	99003300	Workshops / Seminars/ Human Values / Social Service/NCC/NSS	-	-	-	1
Total			**20**	**3**	**8**	**28**

Semester -III

S. No.	Course Code	Course Name	L	T	P	Credits
1.	19002600	Applied Mathematics-III	3	1	0	4
2.	19003700	Computer System Architecture	3	0	0	3
3.	19003500	Data Structures	3	0	0	3
4.	19003600	Data Structures Lab	0	0	2	1
5.	19008600	Object Oriented Programming with C/C++	3	1	0	4
6.	19008700	Object Oriented Programming with C/C++Lab	0	0	2	1
7.	19003800	Operating Systems	3	0	0	3
8.	19003900	Operating Functions Lab	0	0	2	1
9.	19004000	Digital Electronic Circuits	3	0	0	3
10.	19004100	Digital Electronic Circuits Lab	0	0	2	1
11.	11012200	Human Values, Business & Managerial Ethics	2	0	0	2
12.	19004200	Ability and Skill Enhancement -III	2	0	0	2
13.	99003300	Workshops / Seminars/ Human Values / Social Service/NCC/NSS	-	-	-	1
Total			**22**	**2**	**8**	**29**

Semester -IV

S. No.	Course Code	Course Name	L	T	P	Credits
1.	19005300	Optimization Techniques	3	0	0	3
2.	19006100	Advanced Numerical Techniques Computation Lab (ANTC)	0	0	4	2
3.	19015100	Introduction to Machine Learning	3	0	0	3
4.	19006000	Software Engineering	3	0	0	3
5.	19005600	Computer Networks	3	0	0	3
6.	19005700	Computer Networks Lab	0	0	2	1
7.	19015200	Python	3	0	0	3
8.	19015300	Python Lab	0	0	2	1
9.	19005400	Web Technologies	3	0	0	3
10.	19005500	Web Technologies Lab	0	0	2	1
11.	11017100	Organizational Behavior	2	0	0	2
12.	19006200	Ability and Skill Enhancement -IV	2	0	0	2
13.	99003300	Workshops / Seminars/ Human Values / Social Service/NCC/NSS	-	-	-	1
Total			**22**	**0**	**10**	**28**

Semester – V

S. No.	Course Code	Course Name	L	T	P	Credits
1.	19007400	**Elective -I**	3	0	0	3
2.	19007500	**Elective-I**	0	0	2	1
3.	19007600	Analysis and Design of Algorithm	3	0	0	3
4.	19007700	Analysis and Design of Algorithm Lab	0	0	2	1
5.	19015400	Database Management Systems with MySQL	3	0	0	3
6.	19015500	Database Management Systems with MySQL Lab	0	0	2	1
7.	19008000	Computer Graphics	3	0	0	3
8.	19008100	Computer Graphics Lab	0	0	2	1
9.	19008200	Core Java	3	0	0	3
10.	19008300	Core Java Lab	0	0	2	1
11.	19008400	PHP & My SQL	3	0	0	3
12.	19008500	PHP & My SQL Lab	0	0	2	1
13.	19006300	Ability & Skill Enhancement – V	2	0	0	2
14.	19007300	Summer Internship and Report	0	0	8	4
15.	99003300	Workshops / Seminars/ Human Values / Social Service/NCC/NSS	-	-	-	1
Total			**20**	**0**	**20**	**31**

Semester - VI

S. No.	Course Code	Course Name	L	T	P	Credits
1.	19008800	Theory of Computation	3	0	0	3
2.	19008900	Theory of Computation Lab	0	0	2	1
3.	19009000	.NET Technologies	3	0	0	3
4.	19009100	.NET Technologies Lab	0	0	2	1
5.	19015600	Internet of Things (IOT)	3	0	0	3
6.		**Elective II**	3	0	0	3
7.		**Elective II**	0	0	2	1
8.		**Elective III**	4	0	0	4
9.		**Elective-IV**	4	0	0	4
10.	19006400	Ability & Skill Enhancement– VI	2	0	0	2
11.	99003300	Workshops / Seminars/ Human Values / Social Service/NCC/NSS	-	-	-	1
12.			3	0	0	3
Total			**19**	**0**	**6**	**26**

Semester -VII

S. No.	Course Code	Course Name	L	T	P	Credits
1.	19010400	Capstone Project	0	0	10	5
2.	19010500	Compiler Construction	3	0	0	3
3.	19010700	Artificial Intelligence	4	0	0	4
4.		**Elective-V**	4	0	0	4
5.		**Elective-VI**	4	0	0	4
6.	19015700	Design Project	2	0	0	2
7.	19010200	Ability & Skill Enhancement – VII	2	0	0	2
8.	99003300	Workshops / Seminars/ Human Values / Social Service/NCC/NSS	-	-	-	1
		Total	**13**	**0**	**22**	**25**

Semester – VIII

S. No.	Course Code	Course Name	L	T	P	Credits
1.	19012200	Project Semester *(To be carried out in Industry / Research Institutions)	0	0	32	16
2.	19012300	Project Report Viva-Voce & Presentation	0	0	8	4
		Total	**2**	**0**	**40**	**20**

List of Elective Courses

ELECTIVE-I

S. No.	Course Code	Course Name	Credits
1.	19007400	**Microprocessor**	3
2.	19007500	**Microprocessor Lab**	1
3.	19012600	LAMP Technologies	4
4.	19012700	Embedded Systems	4
5.	19012800	Mobile Application Programming	4
		Any Related MOOC Course	

ELECTIVE-II

S. No.	Course Code	Course Name	Credits
1.	19012900	Database Administration with Oracle	4
2.	19013000	Database Administration with IBM DB2	4
3.	19012400	**Advanced Java**	3
4.	19009400	**Advanced Java Lab**	1
5.	19016500	Data warehouse and Data Mining	4
		Any Related MOOC Course	

ELECTIVE-III

S. No.	Course Code	Course Name	Credits
1.	19013200	Network Programming	4
2.	19013300	Advanced Data Structures	4
3.	19013400	Advanced Database Management System	3
4.	19013500	Linux Administration and Shell Programming	1
5.	19013600	Wireless Networks	4
6.	19013700	**Cloud Computing**	4
		Any Related MOOC Course	

ELECTIVE-IV

S. No.	Course Code	Course Name	Credits
1.	19013800	Software Reuse	4
2.	19009600	**Software Verification and Validation**	4
3.	19013900	Software Design and Construction	3
4.	19014000	Software Quality Management	1
5.	19014100	Aspect Oriented Programming	4
		Any Related MOOC Course	

ELECTIVE-V

S. No.	Course Code	Course Name	Credits
1.	19014200	Soft Computing	4
2.	19014300	**Mobile Computing**	4
3.	19014400	Parallel and Distributed Computing	4
4.	19014500	Grid Computing	4
5.	19014600	Ubiquitous and Pervasive Computing	4
		Any Related MOOC Course	

ELECTIVE-VI

S. No.	Course Code	Course Name	Credits
1.	19014700	Natural Language Processing	4
2.	19011100	**Network Security and Cryptography**	4
3.	19014800	Image Processing	4
4.	19010600	Multimedia Technologies	4
5.	19014900	System Programming	4
6.	19015000	Heterogeneous Computing with OpenCL	4
		Any Related MOOC Course	

Specialization Electives for AI & Machine Learning

S. No.	Course Code	Course Name	L	T	P	Credits
1.	19015800	Deep Learning **(E-I)**	3	0	0	3
2.	19015900	Deep Learning Lab **(E-I)**	0	0	2	1
3.	19016000	Data Visualization **(E-II)**	3	0	0	3
4.	19016100	Data Visualization Lab **(E-II)**	0	0	2	1
5.	19016200	Big Data Analytics **(E-III)**	4	0	0	4
6.	19009600	Software Verification and Validation **(E-IV)**	4	0	0	4
7.	19016300	Data Mining Techniques and Applications **(E-V)**	4	0	0	4
8.	19016400	Optimization Techniques in Machine Learning **(E-VI)**	4	0	0	4
9.		Any Related MOOC Course				

EVALUATION SCHEME- THEORY

The evaluation of the theory paper of B. Tech would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessments as follows:

Internal Assessment- Semester I

The distribution of Internal Assessment Marks is as follows:

Type	Details	Marks
Mid Term	One Mid-term Sessional	25
Marks obtained in various Tests, Assignments, Presentations, Quiz, Tutorials, etc.	Average of marks obtained	20
Attendance	75% + : 5 marks	5
TOTAL	**50**	

Internal Assessment- Semester II- VIII

The distribution of Internal Assessment Marks is as follows

Type	Details	Marks
Mid Term	Two Mid-term Sessional of 15 marks each (15+15)	30
Marks obtained in various Tests, Assignments, Presentations, Quiz, Tutorials, etc.	Average of marks obtained	15
Attendance	75%+ : 5 marks	5
TOTAL	**50**	

External Assessment

Type	Marks
Theory	50

EVALUATION SCHEME -PRACTICAL

The evaluation of the practical paper of B.Tech would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessment is as follows:

Internal Assessment- Semester I- VIII

Type	Details	Marks
Marks obtained in various manuals, practical file, participation, any model prepared, output of practical	Average of marks obtained	45
Attendance	75%+ : 5 marks	5
TOTAL	**50**	

External Assessment- Semester I- VIII

Type	Marks
Practical	50