

B.Tech (Civil Engineering) Syllabus from Admission Batch 2018-19 *4th Semester*

**BIJU PATNAIK UNIVERSITY OF TECHNOLOGY, ODISHA
ROURKELA**



Tentative Curriculum and Syllabus

of

B.Tech(Civil Engineering) from the Batch 2018-19

Semester (4th)

Principal
Radhakrishna Institute of Technology
and Engineering, Bhubaneswar

Fourth Semester							
Theory							
Sl No	Category	Course Code	Course Title	L-T-P	Credit	University Marks	Internal Evaluation
1	PC	RCI4C001	Surveying	3-0-0	3	100	50
2	PC	RCI4C002	Transportation Engineering	3-0-0	3	100	50
3	HS	REN4E001 / ROB4E002	Engineering Economics / Organisational Behaviour	3-0-0	3	100	50
4	PC	RCI4C003	Structural Analysis-I	3-0-0	3	100	50
5	PE	RCI4D001	Construction Technology	3-0-0	3	100	50
		RCI4D002	Concrete Technology				
		RCI4D003	Remote Sensing and Geographic Information System				
6	OE	RCI4G001	Introduction to Physical Metallurgy and Engineering Materials	3-0-0	3	100	50
		RCI4G002	Data Communication				
		RCI4G003	Analog Electronic Circuits				
6	MC*	RCN4F001	Constitution of India	3-0-0	0	—	100 (Pass mark is 37)
Total Credit (Theory)					18		
Total Marks						600	300
Practical							
1	PC	RCI4C201	Field Surveying Sessional	0-0-3	2		100
2	PC	RCI4C202	Transportation Engineering Laboratory	0-0-3	2		100
3	PC	RCI4C203	Material Testing Laboratory	0-0-3	2		100
Total Credit (Practical)					6		
Total Semester Credit					24		
Total Marks							300

*Mandatory Non-Credit Courses (MC) result will be reflected with Pass (P) / Fail (F) grade. Thus the grade obtained will not be affecting the grade point average. However it shall appear on the grade sheet as per AICTE rule.


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4 th Semester	RCI4C002	Transportation Engineering	L-T-P 3-0-0	3 CREDITS
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Module-I (10 hrs)

Modes of transportation, importance of highway transportation, history of road construction. Principle of highway planning, road development plans, highway alignments requirements, engineering surveys for highway location.

Geometric design- Design controls, highway cross section elements, cross slope or camber, road width, road margins, typical cross sections of roads, design speed, sight distance, design of horizontal and vertical alignments, horizontal and vertical curves.

Module-II (10 hrs)

Highway Materials:- Properties of subgrade , sub-base , base course and surface course materials , test on subgrade soil, aggregates and bituminous materials.

Traffic Engineering:- definition , fundamentals of traffic flow , traffic management, prevention of road accidents , elements of transport planning , highway drainage

Module-III (9 hrs)

Design of Highway Pavements: Flexible pavements and their design, review of old methods, CBR method, IRC:37-2012, equivalent single wheel load factor, rigid pavements, stress in rigid pavement, IRC design method (IRC:58-2011).

Module-IV (9 hrs)

Highway Construction: Construction of various layers, earthwork, WBM, GSB, WMM, various types of bituminous layers, joints in rigid pavements, Hot Mix Plants, Construction of Rigid Pavements

Module-V (7 hrs)

Highway Maintenance: Various type of failures of flexible and rigid pavements.

Books:

- Highway Engineering, by S.K.Khanna and CEG Justo, Nem Chand & Bros.
- Transportation Engineering-Highway Engineering by C Venkatramaiah, Universities Press.
- A course in Highway Engineering by Dr. S.P. Bindra, Dhanpat Rai Publications.
- Principles of Highway Engineering and Traffic Analysis by Mannering Fred L., Washburn Scott S. and Kilaresk Walter P., Wiley India Pvt. Ltd
- Traffic Engineering and Transportation Planning by Kadiyali, L.R., Khanna Publishers
- Transportation Engineering and Planning by Papacostas, C.S. and Prevedouros, P.D., Prentice Hall.


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4th Semester	RCI4C202	Transportation Engineering Laboratory	L-T-P 0-0-3	2 CREDITS
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Laboratory Experiments (Minimum 8 to 15 experiments)

1. Determination of aggregate crushing value.
2. Determination of Los Angeles abrasion value of aggregates.
3. Determination of aggregate impact value.
4. Determination of penetration value of bitumen.
5. Determination of softening point value of bitumen.
6. Determination of ductility value of bitumen.
7. Determination of flash and fire point of bitumen.
8. Determination of specific gravity of bitumen.
9. Determination of stripping value of aggregate.
10. Determination of flakiness index and elongation index of coarse aggregate.
11. Determination of specific gravity and water absorption of coarse aggregate.
12. Determination of CBR of soil subgrade
13. Design of GSB and WMM
14. Marshall method of mix design
15. Demonstration of advanced equipment for characterization of pavement materials.



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4th Semester	RCN4F001	Constitution of India	L-T-P 3-0-0	0 CREDIT
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Basic features and fundamental principles

The Constitution of India is the supreme law of India. Parliament of India can not make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution. The Parliament of India has been empowered to amend the Constitution under Article 368, however, it cannot use this power to change the “basic structure” of the constitution, which has been ruled and explained by the Supreme Court of India in its historical judgments. The Constitution of India reflects the idea of “Constitutionalism” – a modern and progressive concept historically developed by the thinkers of “liberalism” – an ideology which has been recognized as one of the most popular political ideology and result of historical struggles against arbitrary use of sovereign power by state. The historic revolutions in France, England, America and particularly European Renaissance and Reformation movement have resulted into progressive legal reforms in the form of “constitutionalism” in many countries. The Constitution of India was made by borrowing models and principles from many countries including United Kingdom and America.

The Constitution of India is not only a legal document but it also reflects social, political and economic perspectives of the Indian Society. It reflects India’s legacy of “diversity”. It has been said that Indian constitution reflects ideals of its freedom movement, however, few critics have argued that it does not truly incorporate our own ancient legal heritage and cultural values. No law can be “static” and therefore the Constitution of India has also been amended more than one hundred times. These amendments reflect political, social and economic developments since the year 1950. The Indian judiciary and particularly the Supreme Court of India has played an historic role as the guardian of people. It has been protecting not only basic ideals of the Constitution but also strengthened the same through progressive interpretations of the text of the Constitution. The judicial activism of the Supreme Court of India and its historic contributions has been recognized throughout the world and it gradually made it “as one of the strongest court in the world”.

Course content

1. Meaning of the constitution law and constitutionalism
2. Historical perspective of the Constitution of India
3. Salient features and characteristics of the Constitution of India
4. Scheme of the fundamental rights
5. The scheme of the Fundamental Duties and its legal status
6. The Directive Principles of State Policy – Its importance and implementation
7. Federal structure and distribution of legislative and financial powers between the Union and the States
8. Parliamentary Form of Government in India – The constitution powers and status of the President of India
9. Amendment of the Constitutional Powers and Procedure
10. The historical perspectives of the constitutional amendments in India

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11. Emergency Provisions : National Emergency, President Rule, Financial Emergency
12. Local Self Government – Constitutional Scheme in India
13. Scheme of the Fundamental Right to Equality
14. Scheme of the Fundamental Right to certain Freedom under Article 19
15. Scope of the Right to Life and Personal Liberty under Article 21.