

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

Kakinada-533003, Andhra Pradesh (India)

Comparison of Program Structure R19 with R20

		CRITE	7021497		Code	Program
			OSIA97 B.Tech (PF)			Program Name
		85	0	KLY	TOTAL NO.	Tatalala
		83		R20	Total No. of Courses	
		∞	(R20)	Added in		
		4	(R19)		No of Subjects	
	(w	more than 20%	Deleted Content revised Courses	jects	
	5	28		Courses	Total	
	23/0	7696		%	Total Percentage	

Coordinator

RECISTRAN J.M.T. University Kakinada Kakinada-533003

Chairman, BOS

Dept. of Petroleum Engineering & Petrochemical Engineering, UCEK (4)
J.N.T. University Kakinada
Kakinada - 533 003 4.P. India



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

Kakinada-533003, Andhra Pradesh (India)

Comparison of Course Structure R19 with R20

Program Code: 1A27 Program Name:B.Tech-PETROLEUM ENGINEERING Year: I Semester: I

	R19						R20						Remarks	
Course code	Course name	L	Т	P	С	Course code	Course name	L	Т	P	С	New Course? (R20)	Deleted Course? (R19)	Content Revision %
BS	Mathematics-I	3	0	0	3	BS	Mathematics -	3	0	0	3			20
BS	EngineeringPhysics	3	0	0	3	BS	Engineering Physics	3	0	0	3			20
PCC	IntroductiontoPetroleum Engineering	3	0	0	3	ES	Engineering Mechanics	3	0	0	3		YES	20
ES	ProgrammingforProblemSolving	3	0	0	3	ES	Elements of Mechanical Engineering	3	0	0	3			20
ES	EngineeringDrawing	1	0	3	2.5	ES	Basic Electrical and Electronics Engineering	3	0	0	3			21
BS	EngineeringPhysicsLab	0	0	3	1.5	ES	Engineering Workshop and IT Workshop	0	0	3	1.5			20
ES	ProgrammingforProblemSolving Lab	0	0	3	1.5	BS	Engineering Physics Laboratory	0	0	3	1.5			20
HSSMS	EnglishCommunicationSkillsLab—I	0	0	2	1	ES	Basic Engineering (Mechanical & Electrical) Laboratory	0	0	3	1.5			20
BS	PhysicsVirtualLab	0	0	2	0	BS	Physics Virtual Laboratory	0	0	2	0			20

PR	EngineeringExplorationProject	0	0	2	1	MC	Constitution of	3	0	0	0		21
							India						
*MC	ConstitutionofIndia	3	0	0	0								40
	TOTAL	16	0	15	19.5	Total Cı	redits				19.5		

Program Code: 1A27 Program Name:B.Tech – PETROLEUM ENGINEERING

Vaarul	Semester: II
Year: I	Semester: II

	R19						R20						Remarks	
Course code	Course name	L	Т	P	С	Course code	Course name	L	Т	P	С	New Course ? (R20)	Deleted Course? (R19)	Content Revision %
HSSMS	CommunicativeEnglish	3	0	0	3	BS	Mathematics – II	3	0	0	3			21
BS	Mathematics-II	3	0	0	3	BS	Engineering Chemistry	3	0	0	3			20
BS	Mathematics-III	3	0	0	3	HS	Communicative English	3	0	0	3			40
BS	EngineeringChemistry	3	0	0	3	ES	Engineering Drawing	1	0	4	3			20
ES	EngineeringMechanics	3	0	0	3	ES	Programming for problem solving using - C	3	0	0	3			20
ES	EngineeringWorkshop& IT Workshop	0	0	3	1.5	HS	English Communication Skill Lab	0	0	3	1.5			40
BS	EngineeringChemistryL ab	0	0	3	1.5	BS	Engineering Chemistry Laboratory	0	0	3	1.5			21
HSSMS	EnglishCommunication SkillsLab–II	0	0	3	1.5	ES	Programming for problem solving using C-Laboratory	0	0	3	1.5			21
*MC	EnvironmentalScience	3	0	0	0	HS	Professional Ethics and Human Values	2	0	0	0			20
*MC	PhysicalFitnessActivitie s	0	0	2	0		Physical Fitness Activities	0	0	2	0			20
MOOCS													YES	

(NPTEL/SW AYAM) for											
Honors/Mino											
r Degree											
	TOTAL	18	0	11	19.5	Τ	otal Credits		19.5		

Program Code: 1A27 Program Name:B.Tech – PETROLEUM ENGINEERING Year: II Semester: I

	R19						R20						Remarks	
Course code	Course name	L	Т	P	С	Course code	Course name	L	Т	P	С	New Course? (R20)	Deleted Course? (R19)	Content Revision %
BS	Mathematics- IV	3	0	0	3	BS	Mathematics – III	3	0	0	3	, ,	, ,	21
HSSMS	Managerial Economics & Financial Accounting	3	0	0	3	PCC	Petroleum Geology	3	0	0	3			20
ES	Basic Electrical & Electronics Engineering	3	0	0	3	PCC	Fluid Mechanics for Petroleum Engineers	3	0	0	3	YES		40
PCC	Petroleum Geology	3	0	0	3	PCC	Heat Transfer Operations	3	0	0	3			20
PCC	Chemical Process Principles	3	0	0	3	PCC	Material and Energy Balances	3	0	0	3			21
PCC	Momentum Transfer	3	0	0	3	PCC	Petroleum Geology- Laboratory	0	0	3	1.5			20
PCC	Petroleum Geology Lab	0	0	3	1.5	PCC	Fluid Mechanics for Petroleum Engineers- Laboratory	0	0	3	1.5	YES		21
ES	Basic Engineering (Mech. + Elec.) Lab	0	0	3	1.5	PCC	Heat Transfer Operations- Laboratory	0	0	3	1.5			20
PCC	Momentum Transfer Lab	0	0	3	1.5	SC	Python programming	1	0	2	2			40
*MC	Essence of Indian Traditional Knowledge	3	0	0	0	MC	Environmental Science	2	0	0	0		YES	20
*MC	Physical Fitness Activities	0	0	2	0									20
MOOCS (NPTEL/SWAYAM) for Honors/Minor Degree														

TOTAL	0	22.5	Total Credits		21.5		

Program Name:B.Tech – PETROLEUM ENGINEERING

Year:	ı	ı

Semester: II

	R19						R20						Remarks	
Course code	Course name	L	Т	P	С	Course code	Course name	L	Т	Р	С	New Course? (R20)	Deleted Course? (R19)	Content Revision %
ES	Elements of Mechanical Engineering	3	0	0	2	HS	Management Science	3	0	0	3			20
PCC	Process Heat Transfer	3	0	0	3	BS	Mathematics –IV	3	0	0	3			40
ES	Materials Science & Engineering	3	0	0	3	PCC	Instrumentation, Process Dynamics & Control	3	0	0	3			20
PCC	Petroleum Exploration	3	0	0	3	PCC	Thermodynamics for Petroleum Engineers	3	0	0	3			
PCC	Thermodynamics for Petroleum Engineers	3	0	0	3	PCC	Drilling & Well Completions	3	0	0	3			20
PCC	Instrumentation, Process Dynamics & Control	3	0	0	2	PCC	Instrumentation, Process Dynamics & Control -Laboratory	0	0	3	1.5			40
PCC	Process Heat Transfer Lab	0	0	3	1.5	PCC	Mathematical methods for Petroleum Engineers – Laboratory	0	0	3	1.5			20
PCC	Instrumentation, Process Dynamics & Control Lab	0	0	3	1.5	PCC	Drilling Fluids – Laboratory	0	0	3	1.5			21
HSSMS	Socially Relevant Projects	0	0	1	0.5	SC	Industry Exploration Project	1	0	2	2	YES		20
*MC	Physical Fitness Activities	0	0	2	0		-							40
	MOOCS (NPTEL/SWAYAM) for Honors/Minor Degree	3	0	0	2									20
	TOTAL				19.5		Total Credits				21.5			

Program Name:B.Tech – PETROLEUM ENGINEERING

Year: III

Semester: I

	R19						R20						Remarks	3
Course code	Course name	L	Т	P	С	Course code	Course name	L	Т	P	С	New Course ? (R20)	Delete d Course ? (R19)	Content Revision %
PCC	Well Logging & Formation Evaluation	3	0	0	3	PCC	Petroleum Exploration	3	0	0	3			20
PCC	Drilling & Well Completions	3	0	0	3	PCC	Well Logging & Formation Evaluation	3	0	0	3			20
PCC	Petroleum Reservoir Engineering – I	3	0	0	3	PCC	Petroleum Reservoir Engineering-I	3	0	0	3			21
PCC	Petroleum Production Engineering	3	0	0	3	OEC	Open Elective Course (for other branches) 1. Introduction to Petroleum Engineering 2. Safety in Petroleum Operations 3. Corrosion Control in Petroleum Industry	3	0	0	3	YES		20
PEC	PROFESSIONAL ELECTIVE – I i. CBM Reservoir Engineering ii. Equation of State and PVT Analysis	3	0	0	3	PEC	Professional Elective courses 1. Fundamentals of Liquefied Natural Gas. 2. CBM Reservoir Engineering 3. Offshore DrillingComposites	3	0	0	3	YES		20

PCC	Mathematical	0	0	3	1.5	PCC	Petroleum Reservoir	0	0	3	1.5		20
	methods for						Engineering -Laboratory						
	petroleum												
	engineers -												
	Laboratory												
PCC	Drilling Fluids -	0	0	3	1.5	PCC	Drilling Simulation – Laboratory	0	0	3	1.5		20
	Laboratory												
PCC	Drilling Simulation -	0	0	3	1.5	SC	Soft Computing Techniques	1	0	2	2		40
	Laboratory												
PCC	Socially Relevant	0	0	1	0.5	MC	Essence of Indian Traditional	2	0	0	0		21
	Project for						Knowledge						
	Petroleum												
	Engineers												
*MC	Physical Fitness	0	0	2	0						1.5		20
	Activities												
PT	Industrial Visits												20
	(Local & Outside)												
MOOCS													20
(NPTEL/S													
WAYAM)													
for													
Honors/													
Minor													
Degree													
	TOTAL				20		TOTAL				21.5		

Program Name:B.Tech – PETROLEUM ENGINEERING

Year:	ш	ı

Semester: II

	R19						R20						Remarks	
Course code	Course name	L	Т	P	С	Cours e code	Course name	L	Т	P	С	New Course? (R20)	Deleted Course? (R19)	Content Revision %
PCC	Petroleum Refinery & Petrochemical Engineering	3	0	0	3	PCC	Petroleum Production Engineering	3	1	0	3			21
PCC	Petroleum Reservoir Engineering-II	3	0	0	3	PCC	Petroleum Reservoir Engineering-II	3	0	0	3			21
OEC	OPEN ELECTIVE— I(for other Branches) i. Petroleum Exploration and Engineering ii. Fundamentals of Offshore Operations iii. Fundamentals of Oil and Gas Production.	3	0	0	3	PCC	Petroleum Refinery & Petrochemical Engineering	3	0	0	3			40
PEC	PROFESSIONAL ELECTIVE – II i. Petroleum Asset Management ii. Acidizing Concepts and Design	3	0	0	3	PEC	Professional Elective courses 1. Advanced Well Completion Engineering 2. Applied Mathematics in Reservoir Engineering 3. Natural Gas Hydrates)	3	0	0	3	YES		20
PEC	PROFESSIONAL ELECTIVE - III i. Production Optimization	3	0	0	3	OEC	Open Elective Course (for other branches) Basic concepts in	3	0	0	3	YES		20

	using Nodal Analysis ii. Fundamental of Liquefied Natural Gas						Petroleum Drilling and Completions 3. Basic concepts in Petroleum Production Engineering 4. Basic concepts in						
							Petroleum Reservoir Engineering						
2HSS	Universal human values 2: understanding harmony	3	0	0	3	PCC	Petroleum Analysis- Laboratory	0	0	3	1.5		20
PCC	Petroleum Reservoir Engineering - Laboratory	0	0	3	1.5	PCC	Petroleum Equipment Design & Simulation - Laboratory	0	0	3	1.5		20
PCC	Petroleum Analysis - Laboratory	0	0	3	1.5	PCC	Petroleum Reservoir Simulation-Laboratory	0	0	3	1.5		20
*MC	IPR & Patents	3	0	0	0	SC	Data Science	1	0	2	2		21
*MC	Employability Skills – I: Python Programming	0	0	2	0	MC	IPR & Patents	2	0	0	0		20
PT	Summer Internship (4 - 6 Weeks)												40
	MOOCS (NPTEL/SWAYAM) for Honors/Minor Degree												20
	TOTAL				21		TOTAL				21.5		

Program Name:B.Tech – PETROLEUM ENGINEERING

Year: IV

Semester: I

	R19						R20						Remarks	
Course code	Course name	L	Т	P	С	Course code	Course name	L	Т	P	С	New Course? (R20)	Deleted Course? (R19)	Content Revision %
PCC	HSE in Petroleum Industry	3	0	0	3	PE-3	Professional Elective courses 1. Design of Surface Facilities 2. Reservoir Modeling & Simulation 3. Subsea Engineering	3	0	0	3	YES		20
PCC	Design and Operation of Surface Facilities	3	0	0	3	PE-4	Professional Elective courses 1. HSE in Petroleum Industry 2. Well Stimulation 3. Horizontal Well Technology	3	0	0	3			20
PEC	PROFESSIONAL ELECTIVE – IV i. Enhanced Oil Recovery Techniques. ii. Advanced Well Completion Engineering.	3	0	0	3	PE-5	Professional Elective courses 1. Petroleum Economics, Policies and Regulations 2. EOR Techniques 3. Asset Management	3	0	0	3			40
PEE	PROFESSIONAL ELECTIVE – V i. Subsea Engineering. ii. Petroleum Economics, Policies and Regulations.	3	0	0	3	OE-3	Open Elective Courses (for other branches) 1. Transportation of oil and gas 2. Basics concepts in Seismic methods for Hydrocarbon Exploration 3. Basic concepts in Artificial lift methods	3	0	0	3			20
OEC	OPEN ELECTIVE – II (for other branches) i. Corrosion Control in Petroleum Industry. ii. Unconventional Hydrocarbon Resources.	3	0	0	3	OE-4	Open Elective Courses (for other branches) 1. Deepwater Technology 2. Basic concepts of acidizing and hydrofracturing 3. Fundamentals of EOR	2	0	2	3			20

							Techniques						
PCC	Petroleum Equipment Design &	0	0	3	1.5		Universal Human Values 2:	3	0	0	3		20
100	Simulation – Laboratory					HSC-3	Understanding Harmony						
PCC	Petroleum Reservoir Simulation -	0	0	3	1.5		Cloud Computing	1	0	2	2		21
rcc	Laboratory					SOC-5							
	Presentation/Seminar (S		0	0	1		Evaluation of Summer	0	0	0	3		20
PR							Internship completed after						
	Report)						III B.Tech II Semester						
PR	Project work - Phase 1	0	0	0	2								
*MC	Professional Ethics And Human	3	0	0	0								20
WIC	values												
*MC	Employability Skills – II: Data	0	0	2	0								
IVIC	Sciences												
	MOOCS (NPTEL/SWAYAM) for												
	Honors /Minor Degree												
	TOTAL				21		TOTAL				23		

Program Code: 1A27 Program Name:B.Tech – PETROLEUM ENGINEERING Year: IV Semester: II

	R19						1	R20					Remarks	
Course code	Course name	L	T	P	С	Course code	Course name	L	Т	P	С	New Course? (R20)	Deleted Course? (R19)	Content Revision %
PEC	PROFESSIONAL ELECTIVE – VI i. Offshore Deepwater Drilling and Production ii. Pipeline Engineering	3	0	0	3	Major Project	PROJ	0	0	0	1 2		YES	
PEC	PROFESSIONAL ELECTIVE - VII i. Applied Mathematics in Reservoir Engineering	3	0	0	3									

	ii. Advances in Seismic Exploration									
OEC	OPEN ELECTIVE – III (for Petroleum Engineering) i. NPTEL-Data Analysis & Decision making ii. NPTEL- E-Business iii. NPTEL- Innovation, Business Models & Entrepreneurship	3	0	0	3					
PR	Project Work - Phase 2	3	0	0	8					
*MC	Physical Fitness Activities	0	0	2	0					
MOOCS (NPTEL/SWAYAM) for Honors /Minor Degree										
	ТОТА					TOTAL		12		

TOTAL CREDITS: (R19) I Year (39) II Year (42) III Year (41) IV Year (38) = 160 Credits

Program Code:

Program Name: M. Tech – PETROLEUM ENGINEERING (new course)

Year: I

Semester: I

	R16					R19						Remark	(S
Cour se code	Course name	L	ГР	С	Course code	Course name	L	Т	P	С	New Cour se? (R19)	Delet ed Cour se? (R16)	Conte nt Revisi on %
					PC-1	 Offshore Drilling. (PE stream) A Fundamentals Of Petroleum Geology and Reservoir Engineering. (NON- PE stream) 	3	0	0	3	Yes		21
					PC-2	1.Reservoir Stimulation(PE stream) 2. Petroleum well Drilling and Production Engineering. (NON- PE stream)	3	0	0	3	Yes		40
					PE-1	Advanced Numerical Methods and Applied Statistics. 2. CBM & Shale gas engineering	3	0	0	3	Yes		20
					PE-2	Transportation of Oil and Gas 2. Advanced Well Logging techniques & Well Testing Analysis	3	0		3	Yes		20
						Research Methodology and IPR.	0	0	4	2	Yes		21
					L-1	Advanced Numerical Methods and Applied Statistics Laboratory (MATLAB Based)	0	0	4	2	Yes		20
					L-1	Drilling Simulation Laboratory.	2	0	0	2	Yes		21
					AC-1	Project Management.	2	0	0	0	Yes		21
						TOTAL				18			-

Program Code:

Program Name: M. Tech – PETROLEUM ENGINEERING

Semester: II

	R16						R19						Remarks	S
Cour se code	Course name	L	Т	P	С	Course code	Course name	L	Т	P	С	New Cour se? (R19)	Delet ed Cour se? (R16)	Cont ent Revis ion %
							Artificial Lift Techniques	3	0	0	3	Yes		40
							Reservoir Modelling & Simulation	3	0	0	3	Yes		20
							1. Advanced EOR Techniques. 2. Advanced well completions.	0	0	3	3	Yes		20
							Flow Assurance. 2. Advanced horizontal well technology	0	0	3	3	Yes		21
							Reservoir Simulation Laboratory	0	0	4	2	Yes		20
							Flow Assurance Laboratory.	0	0	4	2	Yes		20
							Integrated Reservoir Management.	2	0	0	2	Yes		20
							Internship in Petroleum industry and presentations. #	2	0	0	0	Yes		20
							TOTAL				18			

Program Code:

Program Name:M.Tech –PETROLEUM ENGINEERING

Year: II

Year: II

Semester: IV

Semester: III

R16		R19						Remar	ks
	Course code	Course name	L	Т	P	С	New Cour se? (R19)	Delet ed Cour se? (R16)	Content Revision %
	Program Elective – V CA301	MOOCs- I	3	0	0	3	yes		20
	Open Elective CA 302	MOOCs – II	3	0	0	3	yes		20
	CA 303	Project /Dissertation Phase-I	0	0	2	l l	yes		20
<u> </u>		TOTAL				16			

Program Code:

Program Name:M.Tech – PETROLEUM ENGINEERING

	R16					R1	.9					Remarks	
					Course	Course name	L	T	Р	С	New	Deleted	Content
					code						Course?	Course?	Revision
											(R19)	(R16)	%
-					1	Project	0	0	32	16	ves	1	21

		/Dissertation Phase-II				
		TOTAL		16		