



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
Kakinada-533003, Andhra Pradesh (India)

Comparison of Program Structure R19 with R20

Program Code	Program Name	Total No. of Courses		No of Subjects			Total Courses	Percentage %
		R19	R20	Added in (R20)	Deleted (R19)	Content revised more than 20%		
021A27	B.Tech (PE)	85	83	8	4	3	83	25%

Coordinator
NMV

Buvelo
REGISTRAR
J.M.T. University Kakinada
Kakinada-533003

[Signature]
Chairman, BOS
Dept. of Petroleum Engineering &
Petrochemical Engineering, UCEK (A)
J.M.T. University Kakinada
Kakinada - 533 003 A.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	T	P	C	Course code	Course name	L	T	P	C	New Course? (R20)	Deleted Course? (R19)	Content Revision %
BS	Mathematics–I	3	0	0	3	BS	Mathematics - I	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

TOTAL		0		22.5	Total Credits			21.5			
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R19						R20						Remarks		
Course code	Course name	L	T	P	C	Course code	Course name	L	T	P	C	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 Code: 1A27

Program Name: B.Tech – PETROLEUM ENGINEERING

Year: III

Semester: I

R19						R20						Remarks		
Course code	Course name	L	T	P	C	Course code	Course name	L	T	P	C	New Course ? (R20)	Deleted 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 Drilling Composites	3	0	0	3	YES		20

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

R19						R20						Remarks		
Course code	Course name	L	T	P	C	Course code	Course name	L	T	P	C	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	1. Open Elective Course (for other branches) 2. 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			

R19						R20						Remarks		
Course code	Course name	L	T	P	C	Course code	Course name	L	T	P	C	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 hydro-fracturing 3. Fundamentals of EOR	2	0	2	3			20

	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														
TOTAL					17	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					Remarks				
Course code	Course name	L	T	P	C	Course code	Course name	L	T	P	C	New Course? (R19)	Deleted Course? (R16)	Content Revision %
						PC-1	1. Offshore Drilling. (PE stream) 2. 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	1. Advanced Numerical Methods and Applied Statistics. 2. CBM & Shale gas engineering	3	0	0	3	Yes		20
						PE-2	1. Transportation of Oil and Gas 2. Advanced Well Logging techniques & Well Testing Analysis	3	0	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

Year: I

Semester: II

R16					R19					Remarks				
Course code	Course name	L	T	P	C	Course code	Course name	L	T	P	C	New Course? (R19)	Deleted Course? (R16)	Content Revision %
							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
							1. 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

Semester: III

R16					R19					Remarks			
					Course code	Course name	L	T	P	C	New Course? (R19)	Deleted Course? (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	10	yes		20
						TOTAL				16			

Program Code:

Program Name:M.Tech – PETROLEUM ENGINEERING

Year: II

Semester: IV

R16					R19					Remarks			
					Course code	Course name	L	T	P	C	New Course? (R19)	Deleted Course? (R16)	Content Revision %
					1	Project	0	0	32	16	yes		21

							/Dissertation Phase-II							
							TOTAL				16			