Curriculum related to Environment and Sustainability

Dr. E. VIJAYAKRISHNA KAPAIA
B.Tech. (Mech.), M.Tech.(Energy), Ph.D. (IIT Madras)
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REGULATIONS, CURRICULUM AND SYLLABUS

for

B. TECH

BIO MEDICAL ENGINEERING

PONDICHERRY UNIVERSITY
PONDICHERRY-605 014

B.Tech – Curriculum
Bio Medical Engineering

I semester

Code	Subjects	Periods			Credits	Marks		
		L	T	P		IA	UE	TM
	Theory							
T101	Mathematics-I	3	1	0	4	25	75	100
T102	Physics	3	0	0	4	25	75	100
T103	Chemistry	3	0	0	4	25	75	100
T110	Basic Civil and Mechanical Engineering	4	0	0	4	25	75	100
T111	Engineering Mechanics	2	1	0	4	25	75	100
T112	Communicative English	3	0	0	3	25	75	100
	Practical							
P104	Physics Lab	0	0	3	2	50	50	100
P105	Chemistry Lab	0	0	3	2	50	50	100
P106	Work Shop Practice	0	0	3	2	50	50	100
	Total	18	2	9	29	300	600	900

II semester

Code	Subjects	Periods			Credits	Marks		
		L	T	P		IA	UE	TM
	Theory							
T107	Mathematics-II	3	1	0	4	25	75	100
T108	Material Science	3	0	0	3	25	75	100
T109	Environmental Science	3	0	0	3	25	75	100
T104	Basic Electrical and Electronics Engineering	3	1	0	4	25	75	100
T105	Thermodynamics	2	1	0	4	25	75	100
T106	Computer Programming	3	0	0	3	25	75	100
	Practical							
P101	Computer Programming Lab	0	0	3	2	50	50	100
P102	Engineering graphics	2	0	3	2	50	50	100
P103	Basic Electrical and Electronics Lab	0	0	3	2	50	50	100
P107	NSS/NCC*	-	-		0		-	
	Total	19	3	12	27	300	600	900

*To be completed in I and II semesters, under Pass / Fail option only and not counted for CGPA calculation.

T109 ENVIRONMENTAL SCIENCE

UNIT I

Environmental Segments and Natural Resources: Environmental segments-lithosphere, hydrosphere, biosphere and atmosphere-layers of atmosphere. Pollution-definition and classification. Pollutants-classification.Forest resources-use and overexploitation, deforestation, forest management. Water resources-sources, use and conflicts over water, dams-benefits and problems. Mineral resources-mineral wealth of India, environmental effects of extracting and using mineral resources. Food resources-world food problems, environmental impact of modern agriculture-fertilizer and pesticides, overgrazing and land resources-land degradation- land slides, soil erosion and desertification. Energy resources-growing energy needs renewable and non-renewable energy resources and use of alternate-energy sources.

UNIT II

Ecosystem and Biodiversity: Concept of an ecosystem-structure and function of an ecosystem. Producers, consumers and decomposers. Energy flow in the ecosystem. Food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of forest, grass land, desert and aquatic (fresh water, estuarine and marine) ecosystem. Biodiversity-definition-genetic species and ecosystem diversity. Value of biodiversity – consumptive use, productive use, social, ethical, aesthetic and option values. Hot spots of biodiversity. Threats to biodiversity-habitat loss, poaching of wild life, human-wildlife conflicts. Endangered and endemic species. Conservation of biodiversity-in situ and ex-situ conservation of biodiversity.

UNIT III

Air Pollution: Air pollution-sources of air pollution. Sources, effects and control measures of oxides of nitrogen, oxides of sulphur, oxides of carbon, hydrocarbon, chlorofluro carbons and particulates. Green house effect-causes and effects on global climate and consequences. Ozone depletion-causes, mechanism and effect on the environment. Smog-sulfurous and photochemical smog-effect on the environment. Acid rain-theory of acid rain and effects.

UNIT IV

Water Pollution and Solid Waste Management Sources: effects and control measures of –water pollution, soil pollution, marine pollution, noise pollution, thermal pollution and radioactive pollution. Solid waste management – causes, effect and control measures of urban and industrial wastes.

UNIT V

Social Issues and the Environment: From unsustainable to sustainable development. Urban problems related to energy. Water conservation, rain water harvesting, water shed management. Resettlement and rehabilitation

of people. Environmental ethics. Consumerism and waste products. Environmental protection act-air (prevention and control of pollution) act, water (prevention and control of pollution) act, wildlife protection act, forest conservation act. Role of an individual in prevention of pollution.
Human population and the environment-population growth, variation among nations, population explosion, role of information technology in environment and human health.

Text Books:

1. K. Raghavan Nambiar, "Text Book of Environmental Studies" 2nd edition, Scitech Publications, India, Pvt. Ltd, Chennai, 2008.
2. A. K. De, "Environmental chemistry" 6rd edn; New age international (P) Ltd, New Delhi, 2006.

Reference Books:

1. B.K. Sharma, "Environmental chemistry" goel publishing house, Meerut, 2001.
2. G. S. Sodhi, Fundamental concepts of environmental chemistry, Narosa publishing house, New Delhi
3. S .S.Dara, " A text book of environmental chemistry and pollution control, S. Chand and Company Ltd, New Delhi, 2002.
4. Richard T. Wright, environmental science, 9th edition, Pearson education inc, New Delhi, 2007
5. P. Meenakshi, "Elements of environmental science and engineering" PHI Learning, New Delhi, 2006.

LIST OF EXERCISES

I Fitting

1. Study of tools and Machineries
2. Symmetric fitting
3. Acute angle fitting

II Welding

1. Study of arc and gas welding equipment and tools
2. Simple lap welding (Arc)
3. Single V butt welding (Arc)

III Sheet metal work

1. Study of tools and machineries
2. Frustum
3. Waste collection tray

IV Carpentry

1. Study of tools and machineries
2. Half lap joint
3. Corner mortise joint.

P107 NCC / NSS

NCC/NSS training is compulsory for all the Undergraduate students

1. The above activities will include Practical/field activities/Extension lectures.
2. The above activities shall be carried out outside class hours.
3. In the above activities, the student participation shall be for a minimum period of 45 hours.
4. The above activities will be monitored by the respective faculty incharge and the First Year Coordinator.
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PONDICHERRY UNIVERSITY

Bachelor of Technology
COMPUTER SCIENCE AND ENGINEERING

Revised
Regulations, Curriculum & Syllabus
(for all semesters)
Effective from the academic year 2013-2014

PONDICHERRY UNIVERSITY
RV NAGAR, KALAPET, PUDUCHERRY – 605 014

CURRICULUM &SYLLABUS
B.Tech(Computer Science &Engineering)

I Semester

Sub. Code	Subjects	Periods			Credits	Marks		
		L	T	P		IA	UE	TM
	Theory							
T101	Mathematics – I	3	1	-	4	25	75	100
T102	Physics	4	-	-	4	25	75	100
T103	Chemistry	4	-	-	4	25	75	100
T104	Basic Electrical and Electronics Engineering	3	1	-	4	25	75	100
T105	Engineering Thermodynamics	3	1	-	4	25	75	100
T106	Computer Programming	3	1	-	4	25	75	100
	Practical							
P101	Computer Programming Lab	-	-	3	2	50	50	100
P102	Engineering Graphics	2	-	3	2	50	50	100
P103	Basic Electrical & Electronics Lab	-	-	3	2	50	50	100
	Total	**22**	**4**	**9**	**30**	**300**	**600**	**900**

II Semester

Sub. Code	Subjects	Periods			Credits	Marks		
		L	T	P		IA	UE	TM
	Theory							
T107	Mathematics – II	3	1	-	4	25	75	100
T108	Material Science	4	-	-	4	25	75	100
T109	Environmental Science	4	-	-	4	25	75	100
T110	Basic Civil and Mechanical Engineering	4	-	-	4	25	75	100
T111	Engineering Mechanics	3	1	-	4	25	75	100
T112	Communicative English	4	-	-	4	25	75	100
	Practical							
P104	Physics lab	-	-	3	2	50	50	100
P105	Chemistry lab	-	-	3	2	50	50	100
P106	Workshop Practice	-	-	3	2	50	50	100
P107	NSS / NCC *	-	-	-	-	-	-	-
	Total	**22**	**2**	**9**	**30**	**300**	**600**	**900**

* To be completed in I and II semesters, under Pass / Fail option only and not counted for CGPA calculation.

T109 ENVIRONMENTAL SCIENCE

OBJECTIVES

- *To know about the environment.*
- *To understand about environmental pollution.*
- *To apply the knowledge in understanding various environmental issues and problems.*

UNIT I – Environment and Energy Resources

Environmental segments – atmosphere, hydrosphere, lithosphere and biosphere. Atmospheric layers. Pollution definition and classification. Pollutants classification. Forest resources – use and over exploitation, deforestation, forest management. Water resources – use and conflicts over water, dams – benefits and problems. Mineral resources – mineral wealth of India, environmental effects of extracting and using mineral resources. Food resources – world food problems, environmental impact of modern Agriculture – fertilizer and pesticides. Energy resources – growing needs, renewable and non-renewable energy resources and use of alternate energy sources. From unsustainable to sustainable development.

UNIT II - Ecosystem and Biodiversity

Concept of an ecosystem - structure and function of an ecosystem.Producers, consumers, and decomposers.Energy flow in the ecosystem. Food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of forest, grassland, desert and aquatic (fresh water, esturine and marine) ecosystems. Biodiversity – definition, genetic species and ecosystem diversity. Value of biodiversity - consumptive use, productive use, social, ethical, aesthetic and option values. Hot spots of biodiversity. Threats to biodiversity, habitat loss, poaching of wildlife, human wildlife conflicts. Endangered and endemic species. Conservation of biodiversity – in-situ and ex-situ conservation of biodiversity.

UNIT III - Air Pollution

Definition and classification. Chemical and photochemical reaction in different layers of atmosphere. Causes, sources, effects and control measures of air pollutants - oxides of Nitrogen, oxides of Carbon, oxides of Sulfur, hydrocarbons, chloro-fluoro carbons and particulates. Mechanism and effects of air pollution phenomenon – Global Warming, Ozone Depletion, Acid Rain, Sulfurous Smog and Photochemical Smog.

UNIT IV- Water and Land Pollution

Water pollution – causes and effects of organic water pollutants – pesticides, insecticides, detergents and surfactants. Causes and effects of inorganic water pollutants – heavy metal pollution due to Hg, Pb, Cr & Cu. Water pollution control and monitoring – DO, COD, BOD & TOC. Land Pollution – Solid waste management – causes, effect and control measures of urban and industrial wastes. Thermal and radioactive pollution.

UNIT V -Pollution Control and Monitoring

Basic concepts and instrumentation of IR, UV-VIS, atomic absorption spectrometry, Gas Chromatography and Conductometry. Analysis of air pollutants – NO_x, CO_x, SO_x, H_2S, Hydrocarbons and particulates.

Text Books:

1. A. K. De, "Environmental chemistry" 7th Ed; New age international (P) Ltd, New Delhi, 2010.
2. K. Raghavan Nambiar, "Text Book of Environmental Studies" 2nd Ed, Scitech Publications (India) Pvt Ltd, India, 2010.
3. G. S. Sodhi, Fundamental concepts of environmental chemistry, I Ed, Alpha Science International Ltd, India, 2000.

Reference Books:

1. B.K. Sharma, "Environmental chemistry" 11th Ed, KRISHNA Prakashan Media (P) Ltd, Meerut, 2007.
2. S.S.Dara, and D.D. Mishra "A text book of environmental chemistry and pollution control, 5th Ed, S.Chandand Company Ltd, New Delhi, 2012.
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PONDICHERRY UNIVERSITY
PUDUCHERRY - 605014

Regulations and Curriculum

for

B. Tech. Electronics and Communication Engineering

2013-2014

PONDICHERRY UNIVERSITY B.Tech (Electronics and Communication Engineering) CURRICULUM

I Semester

Code No.	Name of the Subjects	Periods			Credits	Marks		
		L	T	P		IA	UE	TM
	Theory							
T101	Mathematics – I	3	1	-	4	25	75	100
T102	Physics	4	-	-	4	25	75	100
T103	Chemistry	4	-	-	4	25	75	100
T110	Basic Civil and Mechanical Engineering	4	-	-	4	25	75	100
T111	Engineering Mechanics	3	1	-	4	25	75	100
T112	Communicative English	4	-	-	4	25	75	100
	Practical							
P104	Physics Laboratory	-	-	3	2	50	50	100
P105	Chemistry Laboratory	-	-	3	2	50	50	100
P106	Workshop Practice	-	-	3	2	50	50	100
	Total	22	2	9	30	300	600	900

II Semester

Code No.	Name of the Subjects	Periods			Credits	Marks		
		L	T	P		IA	UE	TM
	Theory							
T107	Mathematics – II	3	1	-	4	25	75	100
T108	Material Science	4	-	-	4	25	75	100
T109	Environmental Science	4	-	-	4	25	75	100
T104	Basic Electrical and Electronics Engineering	3	1	-	4	25	75	100
T105	Engineering Thermodynamics	3	1	-	4	25	75	100
T106	Computer Programming	3	1	-	4	25	75	100
	Practical							
P101	Computer Programming Laboratory	-	-	3	2	50	50	100
P102	Engineering Graphics	2	-	3	2	50	50	100
P103	Basic Electrical & Electronics Laboratory	-	-	3	2	50	50	100
P107	NSS / NCC *	-	-	-	-	-	-	-
	Total	22	4	9	30	300	600	900

* To be completed in I and II semesters, under Pass / Fail option only and not counted for CGPA calculation.

T 109 - ENVIRONMENTAL SCIENCE

COURSE OBJECTIVE

- *To know about the environment*
- *To understand about environmental pollution*
- *To apply the knowledge in understanding various environmental issues and problems*

COURSE OUTCOME

On successful completion of the module students will be able to:

- *Apply fundamental knowledge to understand about the environment*
- *Identify environmental pollution through science*
- *Apply basic knowledge to solve various environmental issues and problems*

UNIT – I

Environment And Energy Resources: Environmental segments – atmosphere, hydrosphere, lithosphere and biosphere. Atmospheric layers. Pollution definition and classification.Pollutants classification. Forest resources – use and over exploitation, deforestation, forest management. Water resources – use and conflicts over water, dams – benefits and problems. Mineral resources – mineral wealth of India, environmental effects of extracting and using mineral resources. Food resources – world food problems, environmental impact of modern Agriculture – fertilizer and pesticides. Energy resources – growing needs, renewable and non-renewable energy resources anduse of alternate energy sources. From unsustainable to sustainable development. **(12)**

UNIT – II

Ecosystem & Biodiversity: Concept of an ecosystem - structure and function of an ecosystem. Producers, consumers, and decomposers. Energy flow in the ecosystem. Food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of forest, grassland, desert and aquatic (fresh water, esturine and marine) ecosystems. Biodiversity – definition, genetic species and ecosystem diversity. Value of biodiversity - consumptive use, productive use, social, ethical, aesthetic and option values. Hot spots of biodiversity. Threats to biodiversity, habitat loss, poaching of wildlife, human wildlife conflicts. Endangered and endemic species.Conservation of biodiversity – in-situ and ex-situ conservation of biodiversity.

(12)

UNIT – III

Air Pollution: Definition and classification. Chemical and photochemical reaction in different layers of atmosphere. Causes, sources, effects and control measures of air pollutants - oxides of Nitrogen, oxides of Carbon, oxides of Sulfur, hydrocarbons, chloro-fluoro carbons and particulates. Mechanism and effects of air pollution phenomenon – Global Warming, Ozone Depletion, Acid Rain, Sulfurous Smog and Photochemical Smog. **(12)**

UNIT – IV

Water and Land Pollution: Water pollution – causes and effects of organic water pollutants – pesticides, insecticides, detergents and surfactants. Causes and effects of inorganic water pollutants – heavy metal pollution due to Hg, Pb, Cr & Cu. Water pollution control and monitoring – DO, COD, BOD & TOC. Land Pollution – Solid waste management – causes, effect and control measures of urban and industrial wastes. Thermal and radioactive pollution. **(12)**

UNIT – V

Pollution Control and Monitoring: Basic concepts and instrumentation of IR, UV-VIS, atomic absorption spectrometry, Gas Chromatography and Conductometry. Analysis of air pollutants – NOx, COx, SOx, H2S, Hydrocarbons and particulates. **(12)**

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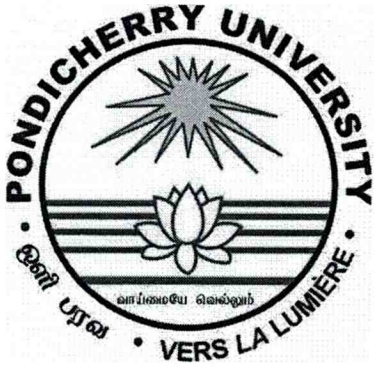
PONDICHERRY UNIVERSITY
PUDUCHERRY - 605014

Regulations and Curriculum
for
B. Tech.
Electrical and Electronics Engineering

From the academic year 2013-2014



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I SEMESTER

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P106	Workshop Practice	-	-	3	2	50	50	100
	Total	**22**	**2**	**9**	**30**	**300**	**600**	**900**

II SEMESTER

CodeNo.	Name ofthe Subjects	Periods			Credits	Marks		
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T105	Engineering Thermodynamics	3	1	-	4	25	75	100
T106	Computer Programming	3	1	-	4	25	75	100
	Practical							
P101	Computer Programming Laboratory	-	-	3	2	50	50	100
P102	Engineering Graphics	2	-	3	2	50	50	100
P103	Basic Electrical & Electronics Laboratory	-	-	3	2	50	50	100
P107	NSS / NCC *	-	-	-	-	-	-	-
	Total	**22**	**4**	**9**	**30**	**300**	**600**	**900**

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T109 ENVIRONMENTAL SCIENCE

OBJECTIVES

- To know about the environment
- To understand about environmental pollution
- To apply the knowledge in understanding various environmental issues and problems

UNIT I – ENVIRONMENT AND ENERGY RESOURCES

Environmental segments – atmosphere, hydrosphere, lithosphere and biosphere. Atmospheric layers. Pollution definition and classification. Pollutants classification. Forest resources – use and over exploitation, deforestation, forest management. Water resources – use and conflicts over water, dams – benefits and problems. Mineral resources – mineral wealth of India, environmental effects of extracting and using mineral resources. Food resources – world food problems, environmental impact of modern Agriculture – fertilizer and pesticides. Energy resources – growing needs, renewable and non-renewable energy resources and use of alternate energy sources. From unsustainable to sustainable development.

UNIT II - ECOSYSTEM AND BIODIVERSITY

Concept of an ecosystem - structure and function of an ecosystem.Producers, consumers, and decomposers.Energy flow in the ecosystem. Food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of forest, grassland, desert and aquatic (fresh water, esturine and marine) ecosystems. Biodiversity – definition, genetic species and ecosystem diversity. Value of biodiversity - consumptive use, productive use, social, ethical, aesthetic and option values. Hot spots of biodiversity. Threats to biodiversity, habitat loss, poaching of wildlife, human wildlife conflicts. Endangered and endemic species. Conservation of biodiversity – in-situ and ex-situ conservation of biodiversity.

UNIT III - AIR POLLUTION

Definition and classification. Chemical and photochemical reaction in different layers of atmosphere. Causes, sources, effects and control measures of air pollutants - oxides of Nitrogen, oxides of Carbon, oxides of Sulfur, hydrocarbons, chloro-fluoro carbons and particulates. Mechanism and effects of air pollution phenomenon – Global Warming, Ozone Depletion, Acid Rain, Sulfurous Smog and Photochemical Smog.

UNIT IV- WATER AND LAND POLLUTION

Water pollution – causes and effects of organic water pollutants – pesticides, insecticides, detergents and surfactants. Causes and effects of inorganic water pollutants – heavy metal pollution due to Hg, Pb, Cr & Cu. Water pollution control and monitoring – DO, COD, BOD & TOC. Land Pollution – Solid waste management – causes, effect and control measures of urban and industrial wastes. Thermal and radioactive pollution.

UNIT V -POLLUTION CONTROL AND MONITORING

Basic concepts and instrumentation of IR, UV-VIS, atomic absorption spectrometry, Gas Chromatography and Conductometry. Analysis of air pollutants – NOx, COx, SOx, H2S, Hydrocarbons and particulates.

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2. A. K. De, "Environmental chemistry" 7th Ed; New age international (P) Ltd, New Delhi, 2010. (For Units III, IV & IV)

Reference Books:

1. B.K. Sharma, "Environmental chemistry" 11th Ed, KRISHNA Prakashan Media (P) Ltd, Meerut, 2007.
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PONDICHERRY UNIVERSITY
PUDUCHERRY - 605014

BATCHELOR OF TECHNOLOGY

B.TECH.,

INFORMATION TECHNOLOGY

REGULATIONS, CURRICULUM & SYLLABUS

[EFFECTIVE FROM THE ACADEMIC YEAR 2013-14]

PONDICHERRY UNIVERSITY
இனி ஒரு விதி
வாய்மையே வெல்லும்
VERS LA LUMIÈRE

Dr. E. VIJAYAKRISHNA RAPAKA
B.Tech. (Mech.), M.Tech.(Energy), Ph.D. (IIT ...)
M.I.S.T.E., F.I.I.P.E., M.C.S.I.M.C.....,
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Second Semester

Sub. Code	Subjects	Periods			Credits	Marks		
		L	T	P		IA	UE	TM
	Theory							
T107	Mathematics – II	3	1	-	4	25	75	100
T108	Material Science	4	-	-	4	25	75	100
T109	Environmental Science	4	-	-	4	25	75	100
T110	Basic Civil and Mechanical Engineering	4	-	-	4	25	75	100
T111	Engineering Mechanics	3	1	-	4	25	75	100
T112	Communicative English	4	-	-	4	25	75	100
	Practical							
P104	Physicslab	-	-	3	2	50	50	100
P105	Chemistry lab	-	-	3	2	50	50	100
P106	Workshop Practice	-	-	3	2	50	50	100
P107	NSS / NCC *	-	-	-	-	-	-	-
	Total	**22**	**2**	**9**	**30**	**300**	**600**	**900**

* To be completed in I and II semesters, under Pass / Fail option only and not counted for CGPA calculation.

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T109 ENVIRONMENTAL SCIENCE

UNIT I – Environment and Energy Resources

Environmental segments – atmosphere, hydrosphere, lithosphere and biosphere. Atmospheric layers.Pollution definition and classification.Pollutants classification. Forest resources – use and over exploitation, deforestation, forest management. Water resources – use and conflicts over water, dams – benefits and problems.Mineral resources – mineral wealth of India, environmental effects of extracting and using mineral resources.Food resources – world food problems, environmental impact of modern Agriculture – fertilizer and pesticides.Energy resources – growing needs, renewable and non-renewable energy resources and use of alternate energy sources.From unsustainable to sustainable development.

UNIT II - Ecosystem and Biodiversity

Concept of an ecosystem - structure and function of an ecosystem.Producers, consumers, and decomposers.Energy flow in the ecosystem.Food chains, food webs and ecological pyramids.Introduction, types, characteristic features, structure and function of forest, grassland, desert and aquatic (fresh water, esturine and marine) ecosystems.Biodiversity – definition, genetic species and ecosystem diversity. Value of biodiversity - consumptive use, productive use, social, ethical, aesthetic and option values. Hot spots of biodiversity.Threats to biodiversity, habitat loss, poaching of wildlife, human wildlife conflicts.Endangered and endemic species.Conservation of biodiversity – in-situ and ex-situ conservation of biodiversity.

UNIT III - Air Pollution

Definition and classification.Chemical and photochemical reaction in different layers of atmosphere.Causes, sources, effects and control measures of air pollutants - oxides of Nitrogen, oxides of Carbon, oxides of Sulfur, hydrocarbons, chloro-fluoro carbons and particulates.Mechanism and effects of air pollution phenomenon – Global Warming, Ozone Depletion, AcidRain, Sulfurous Smog and Photochemical Smog.

UNIT IV- Water and Land Pollution

Water pollution – causes and effects of organic water pollutants – pesticides, insecticides, detergents and surfactants.Causes and effects of inorganic water pollutants – heavy metal pollutiondue to Hg, Pb, Cr & Cu. Water pollution control and monitoring – DO, COD, BOD & TOC. Land Pollution – Solid waste management – causes, effect and control measures of urban and industrial wastes. Thermal and radioactive pollution.

UNIT V -Pollution Control and Monitoring

Basic concepts and instrumentation of IR, UV-VIS, atomic absorption spectrometry, Gas Chromatography and Conductometry.Analysis of air pollutants – NO_x, CO_x, SO_x, H_2S, Hydrocarbons and particulates.

Text Books:

1. A. K. De, "Environmental chemistry" 7th Ed; New age international (P) Ltd, New Delhi, 2010.

2. K. RaghavanNambiar, "Text Book of Environmental Studies" 2ndEd, Scitech Publications (India) Pvt Ltd, India, 2010.

3. G. S. Sodhi, Fundamental concepts of environmental chemistry, I Ed, Alpha Science International Ltd, India, 2000.

Reference Books:

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2. S.S.Dara, and D.D. Mishra "A text book of environmental chemistry and pollution control, 5th Ed, S.Chandand Company Ltd, New Delhi, 2012.

3. Richard T. Wright, Environmental Science: Toward a Sustainable Future, 10thedition, Prentice Hall, 2008

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P107 NCC / NSS

NCC / NSS training is compulsory for all Undergraduate students

1. The above activities will include practical/field activities/Extension lectures.
2. The above activities shall be carried out outside class hours.
3. In the above activities, the student participation shall be for a minimum period of 45 hours.
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PONDICHERRY UNIVERSITY
PUDUCHERRY – 605 014

Branch – II

B TECH DEGREE
IN
MECHANICAL ENGINEERING

Syllabus and regulations

2013-14 ONWARDS

PONDICHERRY UNIVERSITY

B.Tech – CURRICULUM & SYLLABUS

MECHANICAL ENGINEERING

I Semester

S. No.	Subject Code	Subjects	Periods			Credits	Marks		
			L	T	P		IA	UE	TM
		Theory							
01	T101	Mathematics – I	3	1	0	04	25	75	100
02	T102	Physics	4	0	0	04	25	75	100
03	T103	Chemistry	4	0	0	04	25	75	100
04	T104	Basic Electrical and Electronics Engineering	3	1	0	04	25	75	100
05	T105	Engineering Thermodynamics	3	1	0	04	25	75	100
06	T106	Computer Programming	3	1	0	04	25	75	100
		Practical							
07	P101	Computer Programming Lab	0	0	3	02	50	50	100
08	P102	Engineering Graphics	2	0	3	02	50	50	100
09	P103	Basic Electrical and Electronics Lab	0	0	3	02	50	50	100
		Total	**22**	**4**	**9**	**30**	**300**	**600**	**900**

II Semester

S. No.	Subject Code	Subjects	Periods			Credits	Marks		
			L	T	P		IA	UE	TM
		Theory							
01	T107	Mathematics – II	3	1	0	04	25	75	100
02	T108	Material Science	4	0	0	04	25	75	100
03	T109	Environmental Science	4	0	0	04	25	75	100
04	T110	Basic Civil and Mechanical Engineering	4	0	0	04	25	75	100
05	T111	Engineering Mechanics	3	1	0	04	25	75	100
06	T112	Communicative English	4	0	0	04	25	75	100
		Practical							
07	P104	Physics Laboratory	0	0	3	02	50	50	100
08	P105	Chemistry Laboratory	0	0	3	02	50	50	100
09	P106	Workshop Practice	0	0	3	02	50	50	100
10	P107	NSS/NCC*	-	-	-	-	-	-	-
		Total	**22**	**2**	**9**	**30**	**300**	**600**	**900**

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T109 ENVIRONMENTAL SCIENCE

OBJECTIVES

- *To know about the environment.*
- *To understand about environmental pollution.*
- *To apply the knowledge in understanding various environmental issues and problems.*

UNIT I – ENVIRONMENT AND ENERGY RESOURCES

Environmental segments – atmosphere, hydrosphere, lithosphere and biosphere. Atmospheric layers. Pollution definition and classification. Pollutants classification. Forest resources - use and over exploitation, deforestation, forest management. Water resources - use and conflicts over water, dams-benefits and problems. Mineral resources - mineral wealth of India, environmental effects of extracting and using mineral resources. Food resources - world food problems, environmental impact of modern Agriculture - fertilizer and pesticides. Energy resources-growing needs, renewable and non-renewable energy resources and use of alternate energy sources. From unsustainable to sustainable development.

UNIT II – ECOSYSTEM AND BIODIVERSITY

Concept of an ecosystem - structure and function of an ecosystem. Producers, consumers and decomposers. Energy flow in the ecosystem. Food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of forest, grassland, desert and aquatic (fresh water, estuarine and marine) ecosystem. Biodiversity - definition-genetic species and ecosystem diversity. Value of biodiversity – consumptive use, productive use, social, ethical, aesthetic and option values. Hot spots of biodiversity. Threats to biodiversity ,habitat loss, poaching of wildlife, human wildlife conflicts. Endangered and endemic species. Conservation of biodiversity – In-situ and ex-situ conservation of biodiversity.

UNIT III - AIR POLLUTION

Definition and classification. Chemical and photochemical reaction in different layers of atmosphere. Causes, sources, effects, and control measures of air pollutants – oxides of Nitrogen, oxides of Carbon, oxides of Sulfur, hydrocarbons, chloro – fluoro carbons and particulates. Mechanism and effects of air pollution phenomenon – Global warming, Ozone Depletion, Acid rain, Sulfurous Smog and Photochemical Smog.

UNIT IV - WATER AND LAND POLLUTION

Water pollution – causes and effects of organic water pollutants – pesticides, insecticides, detergents and surfactants, causes and effects of inorganic water pollutants – heavy metal pollution due to Hg, Pb, Cr, & Cu. Water pollution control and monitoring – DO, COD, BOD & TOC. Land pollution – solid waste management – causes, effect and control measures of urban and industrial wastes. Thermal and radioactive pollution.

UNIT V – POLLUTION CONTROL AND MONITORING

Basic concepts and instrumentation of IR, UV-VIS, atomic absorption spectrometry, Gas Chromatography and Conductometry. Analysis of air pollutants – NO_X, CO_X, SO_X, H_2S, Hydrocarbons and particulates.

Text Books:

1. K. Raghavan Nambiar, "Text Book of Environmental studies" 2nd Ed, Scitech Publications (India) Pvt Ltd, India, 2010 (For Units I & II)
2. A. K. De, "Environmental Chemistry" 7th Ed; New age International (p) Ltd, New Delhi, 2010.(For Units III,IV&V)

Reference Books:

1. B.K. Sharma, "Environmental chemistry" 11th Ed, KRISHNA Prakashan Media (P) Ltd, Meerut, 2007.
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