

Integrated M.Tech Programmes in Converging Technologies

- **Nanoscience and Nanotechnology (INN)**
- **Bioinformatics and Biotechnology (IBB)**
- **Information and Communication Technology (IIT)**
- **Cognitive and Neurosciences (ICN)**
- **Environmental Science and Technology (IET)**

Programme Code: ICT

Duration – 5 Years

**Programme Structure
And
Curriculum & Scheme of Examination
With
Choice Based Credit System (CBCS)**

**AMITY UNIVERSITY
R A J A S T H A N**

Credit Summary Sheet

Integrated M.Tech Converging Technology					
Semester	CC	DE	VA	OE	Total
1	20	3	4	-	27
2	20	-	8	-	28
3	24	-	4	-	28
4	23	-	4	-	27
5	20	-	4	3	27
6	20	-	4	3	27
7	19	3	4	-	26
8	19	-	4	-	23
9&10	60	-	-	-	60
Total	202	6	36	6	250

Program Structure

Integrated M.Tech Converging Technology : I- SEMESTER						
Course Code	Course Title	Category	Lectures (L) Hours Per Week	Tutorial (T) Hours Per Week	Practical (P) Hours Per Week	Credits
ICT101	Properties of Matter, Thermal Physics and Optics	CC	3	1	-	4
ICT102	Fundamentals Inorganic & Organic Chemistry	CC	3	1	-	4
ICT103	Biochemistry & Molecular Biology	CC	3	1	-	4
ICT104	Programming language fundamental & Programming in C	CC	3	1	-	4
ICT121	Properties of Matter, Thermal Physics and Optics-Lab	CC	-	-	2	1
ICT122	Fundamentals Inorganic & Organic Chemistry-Lab	CC	-	-	2	1
ICT123	Biochemistry & Molecular Biology-Lab	CC	-	-	2	1
ICT124	Programming language fundamental & Programming in C-Lab	CC	-	-	2	1
DE Electives: DE for 10+2 PCB is ICT105 & for PCM is ICT106						
ICT105	Foundation Course in Mathematics	DE	3	-	-	3
ICT106	Foundation Course in Biology	DE				
BCS 101	English	VA	1	-	-	1
BSS105	Understanding Self for Effectiveness – I	VA	1	-	-	1
FLT 101	Foreign Language - I	VA	2	-	-	2
FLG 101	French					
FLS 101	German					
FLC 101	Spanish					
	TOTAL					27

Integrated M.Tech Converging Technology : II- SEMESTER						
Course Code	Course Title	Category	Lectures (L) Hours Per Week	Tutorial (T) Hours Per Week	Practical (P) Hours Per Week	Credits
ICT201	Semiconductor, Electronic devices & Applications	CC	3	-	-	3
ICT202	Physical Chemistry	CC	3	-	-	3
ICT203	Cell Biology & Genetics	CC	3	1	-	4
ICT204	Object Oriented Programming in C++	CC	3	-	-	3
ICT205	Calculus	CC	3	-	-	3
ICT221	Semiconductor, Electronic devices & Applications-Lab	CC	-	-	2	1
ICT222	Physical Chemistry-Lab	CC	-	-	2	1
ICT223	Cell Biology & Genetics-Lab	CC	-	-	2	1
ICT224	Object Oriented Programming in C++-Lab	CC	-	-	2	1
EVS001	Environmental Sciences	VA	4	-	-	4
BCS 201	English	VA	1	-	-	1
BSS205	Understanding Self for Effectiveness – II	VA	1	-	-	1
FLT 201 FLG 201 FLS 201 FLC 201	Foreign Language - II French German Spanish Chinese	VA	2	-	-	2
	TOTAL					28

Integrated M.Tech Converging Technology : III- SEMESTER						
Course Code	Course Title	Category	Lectures (L) Hours Per Week	Tutorial (T) Hours Per Week	Practical (P) Hours Per Week	Credits
ICT301	Electrodynamics and Quantum Mechanics	CC	3	-	-	3
ICT302	Atomic, Molecular and Nuclear Spectroscopy	CC	3	-	-	3
ICT303	Developmental Biology	CC	3	1	-	4
ICT304	Programming in JAVA	CC	3	1	-	4
ICT305	Differential Equations	CC	3	-	-	3
ICT 306	Instrumentation in Biology	CC	3			3
ICT321	Atomic, Molecular and Nuclear Spectroscopy Lab	CC	-	-	2	1
ICT322	Developmental Biology Lab	CC	-	-	2	1
ICT323	Programming in JAVA Lab	CC	-	-	2	1
ICT324	Instrumentation in Biology Lab	CC	-	-	2	1
BCS301	Communication Skills-I	VA	1	-	-	1
BSS305	Understanding Self for Effectiveness – III	VA	1	-	-	1
FLT301 FLG301 FLS301 FLC301	Foreign Language - III French German Spanish Chinese	VA	2	-	-	2
	TOTAL					28

Integrated M.Tech Converging Technology : IV- SEMESTER						
Course Code	Course Title	Category	Lectures (L) Hours Per Week	Tutorial (T) Hours Per Week	Practical (P) Hours Per Week	Credits
ICT401	Statistical and Solid state Physics	CC	3	-	-	3
ICT402	Quantum Chemistry	CC	3	-	-	3
ICT403	Fundamentals of Bioinformatics	CC	3	-	-	3
ICT404	Database management System	CC	3	-	-	3
ICT405	Statistical methods	CC	3	-	-	3
ICT 406	Workshop Practice	CC	-	-	2	1
ICT 407	Microbiology		3	-	-	3
ICT421	Fundamentals of Bioinformatics Lab	CC	-	-	2	1
ICT422	Database management System Lab	CC	-	-	2	1
ICT423	Microbiology Lab	CC		-	4	2
BCS401	Communication Skills-II	VA	1	-	-	1
BSS405	Understanding Self for Effectiveness – IV	VA	1	-	-	1
FLT401 FLG401 FLS401 FLC401	Foreign Language - IV French German Spanish Chinese	VA	2	-	-	2
	TOTAL					27

Integrated M.Tech Converging Technology : V- SEMESTER						
Course Code	Course Title	Category	Lectures (L) Hours Per Week	Tutorial (T) Hours Per Week	Practical (P) Hours Per Week	Credits
ICT501	Advanced Genetic Engineering	CC	3	-		3
ICT502	Fundamentals of Nanoscience and Nanotechnology	CC	3	-		3
ICT503	Fundamentals of Information and communication technology	CC	3	-		3
ICT504	Fundamentals of Cognitive and Neuroscience	CC	3	-		3
ICT 505	Fundamentals of Environment Science and Technology	CC	3	-		3
OE	Open Elective	OE	3	-	-	3
ICT521	Advanced Genetic Engineering Lab	CC	-	-	2	1
ICT522	Fundamentals of Nanoscience and Nanotechnology Lab	CC	-	-	2	1
ICT523	Fundamentals of Information and communication technology Lab	CC	-	-	2	1
ICT524	Fundamentals of Cognitive and Neuroscience Lab	CC	-	-	2	1
ICT525	Fundamentals of Environment Science and Technology Lab	CC	-	-	2	1
BCS501	Communication Skills-III	VA	1	-	-	1
BSS505	Understanding Self for Effectiveness – V	VA	1	-	-	1
FLT501 FLG501 FLS501 FLC501	Foreign Language - V French German Spanish Chinese	VA	2	-	-	2
	TOTAL					27

Integrated M.Tech Converging Technology : VI- SEMESTER						
Course Code	Course Title	Category	Lectures (L) Hours Per Week	Tutorial (T) Hours Per Week	Practical (P) Hours Per Week	Credits
ICT601	Nanotechnology in biology and medicine	CC	3	-	-	3
ICT602	Functional and Comparative Genomics	CC	3	-	-	3
ICT603	Artificial Intelligence	CC	3	-	-	3
ICT604	Cognitive Neurology	CC	3	-	-	3
ICT 605	Environmental Systems Modeling	CC	3	-	-	3
OE	Open elective	OE	3	-	-	3
ICT621	Nanotechnology in biology and medicine Lab	CC	-	-	2	1
ICT622	Functional and Comparative Genomics Lab	CC	-	-	2	1
ICT623	Artificial Intelligence Lab	CC	-	-	2	1
ICT624	Cognitive Neurology Lab	CC	-	-	2	1
ICT 625	Environmental Systems Modeling Lab	CC	-	-	2	1
BCS601	Communication Skills-IV	VA	1	-	-	1
BSS605	Understanding Self for Effectiveness –VI	VA	1	-	-	1
FLT601	Foreign Language - VI	VA	2	-	-	2
FLG601	French					
FLS601	German					
FLC601	Spanish					
	Chinese					
	TOTAL					27

Integrated M.Tech Converging Technology : IBB/INN/IIT/ICN/EST (VII – SEMESTER)						
Course Code	Course Title	Category	Lectures (L) Hours Per Week	Tutorial (T) Hours Per Week	Practical (P) Hours Per Week	Credits
ICT701	Research Methodology	CC	3	-	-	3
Set 1- Bioinformatics and Biotechnology						
IBB702	Advanced Computational Biology	CC	3	-	-	3
IBB703	R & Bioconductor	CC	3	-	-	3
IBB704	Bioprocess Engineering and technology	CC	3	-	-	3
IBB705	Advanced Immunotechnology	CC	3	-	-	3
IBB722	Advanced Computational Biology Lab	CC	-	-	2	1
IBB723	R & Bioconductor Lab	CC	-	-	2	1
IBB724	Bioprocess Engineering and technology	CC	-	-	2	1
IBB725	Advanced Immunotechnology Lab	CC	-	-	2	1
Set 2- Nanoscience and Nanotechnology						
INN702	Nanodevices and Nanosensors	CC	3	-	-	3
INN703	Nanophotonics	CC	3	-	-	3
INN704	Nanomaterial Design and applications	CC	3	-	-	3
INN705	Nanoelectronics	CC	3	-	-	3
INN722	Nanodevices and Nanosensors Lab	CC	-	-	2	1
INN723	Nanophotonics Lab	CC	-	-	2	1
INN724	Nanomaterial Design and applications Lab	CC	-	-	2	1
INN725	Nanoelectronics Lab	CC	-	-	2	1
Set 3- Information and Communication Technology						
IIT702	Satellite Communication	CC	3	-	-	3
IIT703	Optical Fiber Communication	CC	3	-	-	3
IIT704	Modern operating systems	CC	3	-	-	3
IIT705	Signal and Image Processing	CC	3	-	-	3
IIT722	Satellite Communication Lab	CC	-	-	2	1
IIT723	Optical Fiber Communication Lab	CC	-	-	2	1
IIT724	Modern operating systems Lab	CC	-	-	2	1
IIT725	Signal and Image Processing Lab	CC	-	-	2	1
Set 4- Cognitive and Neurosciences						
ICN702	Principle and techniques of neurosciences	CC	3	-	-	3

ICN703	Psychology of mind	CC	3	-	-	3
ICN704	Introduction to dynamical system for neuroscience	CC	3	-	-	3
ICN705	Neuroanatomy	CC	3	-	-	3
ICN722	Principle and techniques of neurosciences Lab	CC	-	-	2	1
ICN723	Psychology of mind Lab	CC	-	-	2	1
ICN724	Introduction to dynamical system for neuroscience Lab	CC	-	-	2	1
ICN725	Neuroanatomy Lab	CC	-	-	2	1
Set 5- Environmental Science and Technology						
IET702	Environmental Impact Assessment	CC	3	-	-	3
IET703	Energy management and technology	CC	3	-	-	3
IET704	Energy Safety and hazard control	CC	3	-	-	3
IET705	Atmospheric Science	CC	3	-	-	3
IET722	Environmental Impact Assessment Lab	CC	-	-	2	1
IET723	Energy management and technology Lab	CC	-	-	2	1
IET724	Energy Safety and hazard control Lab	CC	-	-	2	1
IET725	Atmospheric Science lab	CC	-	-	2	1
BCS701	Communication Skills-V	VA	1	-	-	1
BSS705	Understanding Self for Effectiveness – VII	VA	1	-	-	1
FLT701 FLG701 FLS701 FLC701	Foreign Language - VII French German Spanish Chinese	VA	2	-	-	2
	TOTAL					26

Integrated M.Tech Converging Technology : IBB (VIII – SEMESTER)						
Course Code	Course Title	Category	Lectures (L) Hours Per Week	Tutorial (T) Hours Per Week	Practical (P) Hours Per Week	Credits
IBB801	Pearl and python	CC	3	-	-	3
IBB802	Data Mining	CC	3	-	-	3
IBB803	Protein Engineering	CC	3	-	-	3
IBB804	Animal and Plant biotechnology	CC	3	-	-	3
IBB805	Intellectual property rights	CC	3	-	-	3
IBB821	Pearl and python Lab	CC	-	-	2	1
IBB822	Data Mining Lab	CC	-	-	2	1
IBB823	Protein Engineering Lab	CC	-	-	2	1
IBB824	Animal and Plant biotechnology Lab	CC	-	-	2	1
BCS801	Communication Skills-VI	VA	1	-	-	1
BSS805	Understanding Self for Effectiveness – VIII	VA	1	-	-	1
FLT801 FLG801 FLS801 FLC801	Foreign Language - VIII French German Spanish Chinese	VA	2	-	-	2
	TOTAL					23

Integrated M.Tech Converging Technology : INN (VIII – SEMESTER)						
Course Code	Course Title	Category	Lectures (L) Hours Per Week	Tutorial (T) Hours Per Week	Practical (P) Hours Per Week	Credits
INN801	Nanomedicine and Nanotoxicology	CC	3	-	-	3
INN802	Optoelectronic Devices	CC	3	-	-	3
INN803	Nanocomposites	CC	3	-	-	3
INN804	Nanotechnology Business Applications and Commercialization	CC	3	1	-	4
INN805	Intellectual property rights	CC	3	-	-	3
INN821	Nanomedicine and Nanotoxicology Lab	CC	-	-	2	1
INN822	Optoelectronic Devices Lab	CC	-	-	2	1
INN823	Nanocomposites Lab	CC	-	-	2	1
BCS801	Communication Skills-VI	VA	1	-	-	1
BSS805	Understanding Self for Effectiveness – VIII	VA	1	-	-	1
FLT801 FLG801 FLS801 FLC801	Foreign Language - VIII French German Spanish Chinese	VA	2	-	-	2
	TOTAL					23

Integrated M.Tech Converging Technology : IIT (VIII – SEMESTER)						
Course Code	Course Title	Category	Lectures (L) Hours Per Week	Tutorial (T) Hours Per Week	Practical (P) Hours Per Week	Credits
IIT801	Microwave Engineering	CC	3	-	-	3
IIT802	Mobile computing	CC	3	-	-	3
IIT803	Network Security and cryptography	CC	3	-	-	3
IIT804	Electronic Commerce	CC	3	-	-	3
IIT805	Intellectual property rights	CC	3	-	-	3
IIT821	Microwave Engineering Lab	CC	-	-	2	1
IIT822	Mobile computing Lab	CC	-	-	2	1
IIT823	Network Security and cryptography Lab	CC	-	-	2	1
IIT824	Electronic Commerce Lab	CC	-	-	2	1
BCS801	Communication Skills-VI	VA	1	-	-	1
BSS805	Understanding Self for Effectiveness – VIII	VA	1	-	-	1
FLT801 FLG801 FLS801 FLC801	Foreign Language – VIII French German Spanish Chinese	VA	2	-	-	2
	TOTAL					23

Integrated M.Tech Converging Technology : ICN (VIII – SEMESTER)						
Course Code	Course Title	Category	Lectures (L) Hours Per Week	Tutorial (T) Hours Per Week	Practical (P) Hours Per Week	Credits
ICN801	Neurolinguistics	CC	3	-	-	3
ICN802	Clinical Neurosciences	CC	3	-	-	3
ICN803	Computational Neurosciences	CC	3	-	-	3
ICN804	Neuroimaging methods in cognitive neuroscience	CC	3	-	-	3
ICN805	Intellectual property rights	CC	3	-	-	3
ICN821	Neurolinguistics Lab	CC	-	-	2	1
ICN822	Clinical Neurosciences Lab	CC	-	-	2	1
ICN823	Computational Neurosciences Lab	CC	-	-	2	1
ICN824	Neuroimaging methods in cognitive neuroscience Lab	CC	-	-	2	1
BCS801	Communication Skills-VI	VA	1	-	-	1
BSS805	Understanding Self for Effectiveness – VIII	VA	1	-	-	1
FLT801 FLG801 FLS801 FLC801	Foreign Language - VIII French German Spanish Chinese	VA	2	-	-	2
	TOTAL					23

Integrated M.Tech Converging Technology : IET (VIII – SEMESTER)						
Course Code	Course Title	Category	Lectures (L) Hours Per Week	Tutorial (T) Hours Per Week	Practical (P) Hours Per Week	Credits
IET801	Waste water treatment	CC	3	-	-	3
IET802	Environmental pollution and legislation	CC	3	-	-	3
IET803	Environmental Engineering	CC	3	-	-	3
IET804	Separation Processes in Environmental Applications	CC	3	-	-	3
IET805	Intellectual property rights	CC	3	-	-	3
IET821	Waste water treatment Lab	CC	-	-	2	1
IET822	Environmental pollution and legislation Lab	CC	-	-	2	1
IET823	Environmental Engineering Lab	CC	-	-	2	1
IET824	Separation Processes in Environmental Applications Lab	CC	-	-	2	1
BCS801	Communication Skills-VI	VA	1	-	-	1
BSS805	Understanding Self for Effectiveness – VIII	VA	1	-	-	1
FLT801 FLG801 FLS801 FLC801	Foreign Language - VIII French German Spanish Chinese	VA	2	-	-	2
	TOTAL					23

Integrated M.Tech Converging Technology : IX & X – SEMESTER						
Course Code	Course Title	Category	Lectures (L) Hours Per Week	Tutorial (T) Hours Per Week	Practical (P) Hours Per Week	Credits
ICT 901	Project with converging technology approach & domain approach	CC	-	-	-	60