

# **Integrated M.Tech Programme 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**

<b>Integrated M.Tech Converging Technology</b>					
<b>Semester</b>	<b>CC</b>	<b>DE</b>	<b>VA</b>	<b>OE</b>	<b>Total</b>
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	40	-	-	-	40
<b>Total</b>	<b>205</b>	<b>6</b>	<b>36</b>	<b>6</b>	<b>253</b>

## Program Structure

<b>Integrated M.Tech Converging Technology: I- SEMESTER</b>						
<b>Course Code</b>	<b>Course Title</b>	<b>Category</b>	<b>Lectures (L) Hours Per Week</b>	<b>Tutorial (T) Hours Per Week</b>	<b>Practical (P) Hours Per Week</b>	<b>Credits</b>
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 FLG 101 FLS 101 FLC 101	Foreign Language - I French German Spanish Chinese	VA	2	-	-	2
<b>TOTAL</b>						<b>27</b>

Integrated M.Tech (CT) Syllabus

<b>Integrated M.Tech Converging Technology: II- SEMESTER</b>						
<b>Course Code</b>	<b>Course Title</b>	<b>Category</b>	<b>Lectures (L) Hours Per Week</b>	<b>Tutorial (T) Hours Per Week</b>	<b>Practical (P) Hours Per Week</b>	<b>Credits</b>
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
	<b>TOTAL</b>					<b>28</b>

<b>Integrated M.Tech Converging Technology: III- SEMESTER</b>						
<b>Course Code</b>	<b>Course Title</b>	<b>Category</b>	<b>Lectures (L) Hours Per Week</b>	<b>Tutorial (T) Hours Per Week</b>	<b>Practical (P) Hours Per Week</b>	<b>Credits</b>
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
	<b>TOTAL</b>					<b>28</b>

Integrated M.Tech (CT) Syllabus

<b>Integrated M.Tech Converging Technology: IV- SEMESTER</b>						
<b>Course Code</b>	<b>Course Title</b>	<b>Category</b>	<b>Lectures (L) Hours Per Week</b>	<b>Tutorial (T) Hours Per Week</b>	<b>Practical (P) Hours Per Week</b>	<b>Credits</b>
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
	<b>TOTAL</b>					<b>27</b>

Integrated M.Tech (CT) Syllabus

<b>Integrated M.Tech Converging Technology: V- SEMESTER</b>						
<b>Course Code</b>	<b>Course Title</b>	<b>Category</b>	<b>Lectures (L) Hours Per Week</b>	<b>Tutorial (T) Hours Per Week</b>	<b>Practical (P) Hours Per Week</b>	<b>Credits</b>
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
	<b>TOTAL</b>					<b>27</b>

Integrated M.Tech (CT) Syllabus

<b>Integrated M.Tech Converging Technology: VI- SEMESTER</b>						
<b>Course Code</b>	<b>Course Title</b>	<b>Category</b>	<b>Lectures (L) Hours Per Week</b>	<b>Tutorial (T) Hours Per Week</b>	<b>Practical (P) Hours Per Week</b>	<b>Credits</b>
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 FLG601 FLS601 FLC601	Foreign Language - VI French German Spanish Chinese	VA	2	-	-	2
	<b>TOTAL</b>					<b>27</b>



<b>Integrated M.Tech Converging Technology: IBB (VII – SEMESTER)</b>						
<b>Course Code</b>	<b>Course Title</b>	<b>Category</b>	<b>Lectures (L) Hours Per Week</b>	<b>Tutorial (T) Hours Per Week</b>	<b>Practical (P) Hours Per Week</b>	<b>Credits</b>
IBB701	Advanced Computational Biology	CC	3	-	-	3
IBB702	R & Bioconductor	CC	3	-	-	3
IBB703	Bioprocess Engineering and technology	CC	3	-	-	3
IBB704	Advanced Immunotechnology	CC	3	-	-	3
IBB 705	Research Methodology	CC	3	-	-	3
IBB721	Advanced Computational Biology Lab	CC	-	-	2	1
IBB722	R & Bioconductor Lab	CC	-	-	2	1
IBB723	Bioprocess Engineering and technology	CC	-	-	2	1
IBB 724	Advanced Immunotechnology Lab	CC	-	-	2	1
<b>DE Electives: Student has to select 1 course from the list of following DE electives</b>						
IBB730	Nanomaterial Design and applications	DE	3	-		3
IBB731	Modern operating systems	DE	3	-		3
IBB732	Psychology of mind	DE	3	-		3
IBB733	Energy Safety and hazard control	DE	3	-		3
BCS701	Communication Skills-V	VA	1	-	-	1
BSS705	Understanding Self for Effectiveness – VII	VA	1	-	-	1
FLT701	Foreign Language - VII French	VA	2	-	-	2
FLG701	German					
FLS701	Spanish					
FLC701	Chinese					
	<b>TOTAL</b>					<b>26</b>

<b>Integrated M.Tech Converging Technology: INN (VII – SEMESTER)</b>						
<b>Course Code</b>	<b>Course Title</b>	<b>Category</b>	<b>Lectures (L) Hours Per Week</b>	<b>Tutorial (T) Hours Per Week</b>	<b>Practical (P) Hours Per Week</b>	<b>Credits</b>
INN701	Nanodevices and Nanosensors	CC	3	-	-	3
INN702	Nanophotonics	CC	3	-	-	3
INN703	Nanomaterial Design and applications	CC	3	-	-	3
INN 704	Nanoelectronics	CC	3	-	-	3
INN 705	Research Methodology	CC	3	-	-	3
INN 721	Nanodevices and Nanosensors Lab	CC	-	-	2	1
INN722	Nanophotonics Lab	CC	-	-	2	1
INN723	Nanomaterial Design and applications Lab	CC	-	-	2	1
INN 724	Nanoelectronics Lab	CC	-	-	2	1
<b>DE Electives: Student has to select 1 course from the list of following DE electives</b>						
INN730	Advanced Immunotechnology	DE	3	-	-	3
INN731	Modern operating systems	DE	3	-	-	3
INN732	Psychology of mind	DE	3	-	-	3
INN733	Energy Safety and hazard control	DE	3	-	-	3
BCS701	Communication Skills-V	VA	1	-	-	1
BSS705	Understanding Self for Effectiveness – VII	VA	1	-	-	1
FLT701	Foreign Language - VII French	VA	2	-	-	2
FLG701	German					
FLS701	Spanish					
FLC701	Chinese					
	<b>TOTAL</b>					<b>26</b>

Integrated M.Tech (CT) Syllabus

<b>Integrated M.Tech Converging Technology: IIT (VII – SEMESTER)</b>						
<b>Course Code</b>	<b>Course Title</b>	<b>Category</b>	<b>Lectures (L) Hours Per Week</b>	<b>Tutorial (T) Hours Per Week</b>	<b>Practical (P) Hours Per Week</b>	<b>Credits</b>
IIT701	Satellite Communication	CC	3	-	-	3
IIT702	Optical Fiber Communication	CC	3	-	-	3
IIT703	Modern operating systems	CC	3	-	-	3
IIT 704	Signal and Image Processing	CC	3	-	-	3
IIT 705	Research Methodology	CC	3	-	-	3
IIT 721	Satellite Communication Lab	CC	-	-	2	1
IIT722	Optical Fiber Communication Lab	CC	-	-	2	1
IIT723	Modern operating systems Lab	CC	-	-	2	1
IIT 724	Signal and Image Processing Lab	CC	-	-	2	1
<b>DE Electives: Student has to select 1 course from the list of following DE electives</b>						
IIT730	Advanced Immunotechnology	DE	3	-	-	3
IIT731	Nanomaterial Design and applications	DE	3	-	-	3
IIT732	Psychology of mind	DE	3	-	-	3
IIT733	Energy Safety and hazard control	DE	3	-	-	3
BCS701	Communication Skills-V	VA	1	-	-	1
BSS705	Understanding Self for Effectiveness – VII	VA	1	-	-	1
FLT701	Foreign Language - VII French	VA	2	-	-	2
FLG701	German					
FLS701	Spanish					
FLC701	Chinese					
	<b>TOTAL</b>					<b>26</b>

<b>Integrated M.Tech Converging Technology: ICN (VII – SEMESTER)</b>						
<b>Course Code</b>	<b>Course Title</b>	<b>Category</b>	<b>Lectures (L) Hours Per Week</b>	<b>Tutorial (T) Hours Per Week</b>	<b>Practical (P) Hours Per Week</b>	<b>Credits</b>
ICN701	Principle and techniques of neurosciences	CC	3	-	-	3
ICN702	Psychology of mind	CC	3	-	-	3
ICN703	Introduction to dynamical system for neuroscience	CC	3	1	-	4
ICN 704	Neuroanatomy	CC	3	-	-	3
ICN 705	Research Methodology	CC	3	-	-	3
ICN 721	Neuroscience Lab	CC	-	-	6	3
<b>DE Electives: Student has to select 1 course from the list of following DE electives</b>						
ICN730	Advanced Immunotechnology	DE	3	-	-	3
ICN731	Nanomaterial Design and applications	DE	3	-	-	3
ICN732	Modern operating systems	DE	3	-	-	3
ICN733	Energy Safety and hazard control	DE	3	-	-	3
BCS701	Communication Skills-V	VA	1	-	-	1
BSS705	Understanding Self for Effectiveness – VII	VA	1	-	-	1
FLT701	Foreign Language - VII	VA	2	-	-	2
FLG701	French					
FLS701	German					
FLC701	Spanish					
	Chinese					
	<b>TOTAL</b>					<b>26</b>

<b>Integrated M.Tech Converging Technology: IET (VII – SEMESTER)</b>						
<b>Course Code</b>	<b>Course Title</b>	<b>Category</b>	<b>Lectures (L) Hours Per Week</b>	<b>Tutorial (T) Hours Per Week</b>	<b>Practical (P) Hours Per Week</b>	<b>Credits</b>
IET701	Environmental Impact Assessment	CC	3	-	-	3
IET702	Energy management and technology	CC	3	-	-	3
IET703	Energy Safety and hazard control	CC	3	-	-	3
IET 704	Atmospheric Science	CC	3	-	-	3
IET 705	Research Methodology	CC	3	-	-	3
IET721	Environmental Impact Assessment Lab	CC	-	-	2	1
IET722	Energy management and technology Lab	CC	-	-	2	1
IET723	Energy Safety and hazard control Lab	CC	-	-	2	1
IET 724	Atmospheric Science lab	CC	-	-	2	1
<b>DE Electives: Student has to select 1 course from the list of following DE electives</b>						
IET730	Advanced Immunotechnology	DE	3	-	-	3
IET731	Nanomaterial Design and applications	DE	3	-	-	3
IET732	Modern operating systems	DE	3	-	-	3
IET733	Psychology of mind	DE	3	-	-	3
BCS701	Communication Skills-V	VA	1	-	-	1
BSS705	Understanding Self for Effectiveness – VII	VA	1	-	-	1
FLT701	Foreign Language - VII	VA	2	-	-	2
FLG701	French					
FLS701	German					
FLC701	Spanish					
	Chinese					
	<b>TOTAL</b>					<b>26</b>

Integrated M.Tech (CT) Syllabus

<b>Integrated M.Tech Converging Technology: IBB (VIII – SEMESTER)</b>						
<b>Course Code</b>	<b>Course Title</b>	<b>Category</b>	<b>Lectures (L) Hours Per Week</b>	<b>Tutorial (T) Hours Per Week</b>	<b>Practical (P) Hours Per Week</b>	<b>Credits</b>
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	IPR & Drug Regulatory Affairs	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
	<b>TOTAL</b>					<b>23</b>

Integrated M.Tech (CT) Syllabus

<b>Integrated M.Tech Converging Technology: INN (VIII – SEMESTER)</b>						
<b>Course Code</b>	<b>Course Title</b>	<b>Category</b>	<b>Lectures (L) Hours Per Week</b>	<b>Tutorial (T) Hours Per Week</b>	<b>Practical (P) Hours Per Week</b>	<b>Credits</b>
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	IPR & Drug Regulatory Affairs	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	Foreign Language - VIII	VA	2	-	-	2
FLG801	French					
FLS801	German					
FLC801	Spanish					
	Chinese					
	<b>TOTAL</b>					<b>23</b>

Integrated M.Tech (CT) Syllabus

<b>Integrated M.Tech Converging Technology: IIT (VIII – SEMESTER)</b>						
<b>Course Code</b>	<b>Course Title</b>	<b>Category</b>	<b>Lectures (L) Hours Per Week</b>	<b>Tutorial (T) Hours Per Week</b>	<b>Practical (P) Hours Per Week</b>	<b>Credits</b>
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	IPR & Drug Regulatory Affairs	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
	<b>TOTAL</b>					<b>23</b>



Integrated M.Tech (CT) Syllabus

<b>Integrated M.Tech Converging Technology: ICN (VIII – SEMESTER)</b>						
<b>Course Code</b>	<b>Course Title</b>	<b>Category</b>	<b>Lectures (L) Hours Per Week</b>	<b>Tutorial (T) Hours Per Week</b>	<b>Practical (P) Hours Per Week</b>	<b>Credits</b>
ICN801	Neurolinguistics	CC	3	1	-	4
ICN802	Clinical Neurosciences	CC	3	-	-	3
ICN803	Computational Neurosciences	CC	3	-	-	3
ICN804	Neuroimaging methods in cognitive neuroscience	CC	3	-	-	3
ICN805	IPR & Drug Regulatory Affairs	CC	3	-	-	3
ICN821	Neuroscience Lab	CC	-	-	6	3
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
	<b>TOTAL</b>					<b>23</b>

Integrated M.Tech (CT) Syllabus

<b>Integrated M.Tech Converging Technology: IET (VIII – SEMESTER)</b>						
<b>Course Code</b>	<b>Course Title</b>	<b>Category</b>	<b>Lectures (L) Hours Per Week</b>	<b>Tutorial (T) Hours Per Week</b>	<b>Practical (P) Hours Per Week</b>	<b>Credits</b>
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	IPR & Drug Regulatory Affairs	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
	<b>TOTAL</b>					<b>23</b>

Integrated M.Tech (CT) Syllabus

<b>Integrated M.Tech Converging Technology : IX &amp; X – SEMESTER</b>						
<b>Course Code</b>	<b>Course Title</b>	<b>Category</b>	<b>Lectures (L) Hours Per Week</b>	<b>Tutorial (T) Hours Per Week</b>	<b>Practical (P) Hours Per Week</b>	<b>Credits</b>
ICT 960	Project with converging technology approach & domain approach	CC	-	-	-	40

## Integrated M.Tech (CT) Syllabus