

Name of Department: **Intelligent Systems**

Name of Program: **Bachelor of Technology in IS (BT-IS)**

Courses	Semesters							
	Semester- 1	Semester -2	Semester- 3	Semester- 4	Semester-5	Semester-6	Semester-7	Semester-8
	SCHEME ELC111/ELC112/ELC113(9)	ETH111 (3)	SCHEME HSS-I (11)	SCHEME EME (9-11)	SCHEME HSS-II (9)	SCHEME HSS-II (9)	SCHEME HSS-II (9)	DE-5(9)
	MTH 111M (6)	MTH 113M (6)	ESC201 (14)	ESO207 (12)	ESO-1 (9-11)	DE-1(9)	DE-3(9)	DE-6(9)
	MTH 112M (6)	MTH 114M (6)	IS201(10)	CS771/IS205(12)	IS301(3)	DE-2/UGP-1(9)	DE-4/UGP-2(9)	DE-7/UGP-3(9)
	PHY 111 (3)	PHY 112 (11)	EE200/IS202 (11)	EE250/IS204(11)	EE320/IS304(11)	OE-1(9)	OE-3(9)	OE-5(9)
	PHY 114 (11)	CHM 111 (3)	ESO215M/ESO216M(7)	IS203(12)	IS302(12)	OE-2(9)	OE-4(9)	OE-6(9)
	CHM 112M (4)	ESC 111M (7)			ME381/IS305(7)			
	CHM 113M (4)	ESC 112M (7)						
	TA 111 (9)	LIF111 (6)						
	PE111 (3)	PE112 (3)						
Total Credits	55	52	60	56-58	51-53	45	45	45

Remark, if any:

- Up to 36 OE credits may be waived from the minimum requirements for students opting for either the Dual Degree or Double Major programs.

Credits Summary:

Course Type	Credits Required
Institute Core (IC)	112
ESO/SO	35-37
Department Requirements (DC+DE)	152 (89 DC + 63 DE)
Open Electives (OE)	54
SCHEME	54-58
Total credits	406-412

Name of Program: **BTH-IS (BT in IS with HONOURS)**

Courses	Semesters							
	Semester- 1	Semester -2	Semester- 3	Semester- 4	Semester-5	Semester-6	Semester-7	Semester-8
	SCHEME ELC111/ELC112/ELC113(9)	ETH111 (3)	SCHEME HSS-1 (11)	SCHEME EME (9-11)	SCHEME HSS-2 (9)	SCHEME HSS-2 (9)	SCHEME HSS-2 (9)	DE-3 (9)
	MTH 111M (6)	MTH 113M (6)	ESC201 (14)	ESO207(12)	ESO-1 (9-11)	DE-1 (9)	DE-2 (9)	DE-4 (9)
	MTH 112M (6)	MTH 114M (6)	IS201 (10)	CS771 /IS205(12)	IS301 (3)	UGP-1 (9)	UGP-2 (9)	DE-5 /UGP-3 (9)
	PHY 111 (3)	PHY 112 (11)	EE200 /IS202(11)	EE250 / IS204 (11)	EE320 / IS304 (11)	OE-1 (9)	OE-3 (9)	OE-5 (9)
	PHY 114 (11)	CHM 111 (3)	ESO215M/ESO216M (7)	IS203 (12)	IS302 (12)	OE-2 (9)	OE-4 (9)	OE-6 (9)
	CHM 112M (4)	ESC 111M (7)			ME381/ IS305 (7)	PG DE-1(9)	PG DE-2 (9)	PG DE-3 (9)
	CHM 113M (4)	ESC 112M (7)						
	TA 111 (9)	LIF111 (6)						
	PE111 (3)	PE112 (3)						
Total Credits	55	52	58-60	56-58	51-53	54	54	54

Remark:

- In the BTH-IS template, **27 additional PG DE credits** must be done. **2 UGPs are mandatory** for the BTH program
- PG DE credits must be obtained from courses having a number of the form IS LXX where L = 6/7
- A student must have a graduation **CPI of at least 8.5 to be eligible for B.Tech. Honours.**

Name of Program: **BT in IS with Management (BTM-IS)**

Courses	Semesters							
	Semester- 1	Semester -2	Semester- 3	Semester- 4	Semester-5	Semester-6	Semester-7	Semester-8
	Identical to BT-IS Program	Identical to BT-IS Program	Identical to BT-IS Program	Identical to BT-IS Program	Identical to BT-IS Program	SCHEME HSS-II (9)	SCHEME HSS-II (9)	OE-2 (9)
						DE-1 (9)	OE-1 (9)	OE-3 (9)
						DE-2 UGP-1 (9)	DE-3 /UGP-2 (9)	DE-4 / UGP-3 (9)
						MTB-1 (9)	MTB-3 (9)	MTB-5 (9)
						MTB-2 (9)	MTB-4 (9)	MTB-6 (9)
Total Credits	55	52	60	56-58	51-53	45	45	45

Remark:

- The BTM-IS template replaces **27 DE + 27 OE credits** with **54 MTB (*management track basket*) credits**
- A list of courses that will be notified as being eligible for MTB credits will be communicated at the time of application for the BTM program.
- BTM-IS students can take up to **4 UGPs**, but **only at most 3 UGPs (27 credits)** can be counted towards graduation requirements. All UGPs are optional.

Name of Program: **Dual Degree in IS (BT-MT-IS) (Category-A)**

Courses		Semesters				
	UG part	PG Part		PG Part		
	Semester 1-6	Semester-7	Semester-8	Summer	Semester-9	Semester-10
	Identical to BT-IS program	SCHEME HSS-2 (9)	PG DE-1 (9)	MT Thesis (9)	PG DE-5 (9)	PG DE-6 (9)
		DE-3 (9)	PG DE-2 (9)		MTech Thesis (36)	MTech Thesis (36)
		DE-4 (9)	PG DE-3 (9)			
		DE-5 (9)	PG DE-4 (9)			
		DE-6 (9)	DE-7 (9)			
Total Credits	316	45	45	9	45	45

Remark:

- PG DE **Credits: 54**, Thesis **Credits: 81**
- PG DE credits must be obtained from courses having a number of the form IS LXX where L = 6/7
- For **BT-MT-IS-Cat-A** students, up to **36 OE credits** from the **BT-IS minimum** requirements may be waived and used to fulfil MT requirements instead. All other BT-IS credit requirements (semesters 1-8) must be fulfilled.

Name of Program: **Dual Degree in IS (BT-MT-IS) (Category-B)**

Courses	Semesters				
	UG part		PG Part		
	Semester 1-7	Semester -8	Summer	Semester -9	Semester -10
	Identical to the template of the other department	PG DE-1 (9)	MT Thesis (9)	PG DE-5 (9)	PG DE-6 (9)
		PG DE-2 (9)		MT Thesis (36)	MT Thesis (36)
Total Credits	316	45	9	45	45

Remark:

- **PG DE Credits: 54, Thesis Credits: 81**
- PG DE credits must be obtained from (possibly re/dual-numbered) courses having a number of the form IS LXX where L = 5/6/7/
- For **BT-MT-IS-Cat-B** students, up **to 36 OE credits** from the students' parent department's minimum requirements may be waived and used to fulfil MT requirements instead. All other credit requirements (semesters 1-8) must be fulfilled.

Name of Program: **Dual Degree in IS with Management (BTM-MT-IS) (Category-B)**

Courses	Semesters					
	UG part		PG Part			
	Semester 1-6	Semester -7	Semester -8	Summer	Semester -9	Semester -10
	Identical to BTM-IS program	SCHEME HSS-2 (9)	PG DE-1 (9)	MT Thesis (9)	PG DE-5 (9)	PG DE-6 (9)
		DE-3 (9)	PG DE-2 (9)		MT Thesis (36)	MT Thesis (36)
		MTB-3 (9)	PG DE-3 (9)			
		MTB-4 (9)	PG DE-4 (9)			
		MTB-5 (9)	MTB-6 (9)			
Total Credits	316	45	45	9	45	45

Remark:

- **PG DE Credits: 54, Thesis Credits: 81**
- **PG DE credits** must be obtained from (possibly re/dual-numbered) courses having a number of the form **IS LXX where L = 5/6/7**
- For **BTM-MT-IS** students, up to **9 DE and 27 OE credits** from the **BTM-IS minimum requirements may be waived** and used to fulfil **MT** requirements. All other **BTM-IS credit** requirements (semesters 1-8), including **54 MTB credits**, need to be fulfilled.

Name of Program: **Dual Degree in IS with Honours (BTH-MT-IS)**

Courses	Semesters					
	UG part		PG Part			
	Semester 1-6	Semester -7	Semester -8	Summer	Semester -9	Semester -10
	Identical to BTH-IS program	SCHEME HSS-2 (9)	DE-5 (9)	MT Thesis (9)	PG DE-8 (9)	PG DE-9 (9)
		DE-3 (9)	DE-6 (9)		MT Thesis (36)	MT Thesis (36)
		DE-4 (9)	DE-7 (9)			
		PG DE-2 (9)	PG DE-5 (9)			
		PG DE-3 (9)	PG DE-6 (9)			
		PG DE-4 (9)	PG DE-7 (9)			
Total Credits	311-316	54	54	18	45	45

Remark:

- **PG DE Credits: 81, Thesis Credits: 81**
- A **BTH-MT-IS student** must complete **27 PG DE credits** toward **BTH-IS** requirements, and then **54 additional PG DE credits** to fulfil **MT** requirements, for a **total of 81 PG DE credits**.
- **PG DE credits** must be obtained from (possibly re/dual-numbered) courses having a number of the form **IS LXX where L = 6/7**
- To balance the semester loads, the **BTH-MT-IS** template recommends **18 thesis credits** in the **summer semester** instead of the usual **9 credits**.
- For **BTH-MT-IS** students, up to **36 OE credits** from the **BTH-IS minimum** requirements **may be waived** and instead be used to fulfil **MT** requirements. All other BTH-IS credit requirements (semesters 1-8) need to be fulfilled.
- **BTH-MT-IS** students must do at least **18** and at most **36 credits of UGP** (possibly **taken as DE**) but at most **27 UGP credits** can be **counted** towards graduation requirements.
- The **UG CPI** (instead of graduation CPI) for **BTH-MT-IS students must be at least 8.5 for the “Honor”** qualification to be awarded for the UG part.

Name of Program: **Double Major in IS (DM-IS)**

Odd Semester	Even Semester
ESOXXX+ ESOXXX (14)	IS203 (11)
IS201 (10)	IS204 (12)
IS202 (11)	IS205 (12)
IS302 (12)	DE-2 (9)
DE-1 (9)	DE-3 (9)
56 credits	53 credits

Remark:

- **Total 109 (56+53) mandatory credits** for a **second major in IS**
- Up to **36 OE credits may be waived** from the parent department **BT/BS graduation** requirements when used to fulfil **DM-IS requirements**

Minors in IS (M-IS)

Minor in Digital IS	Minor in Cyberphysical IS
COMPULSORY ESO215M + ESO216M (14) IS201 (10) IS205 (12) One course from the D-basket (9)	COMPULSORY ESO215M + ESO216M (14) IS203 (11) IS204 (12) One course from the C-basket (9)
45 credits*	46 credits*

* Slightly outside of the allowable maximum credit limit 44

Digital Basket (D Basket):

IS611: Probabilistic Machine Learning (CS772)

IS612: Modern Cryptography (CS641)

IS613: Human-AI Interaction (CS698Y)

IS614: Software Engineering for Intelligent Systems

Cyber Physical System Basket (C Basket)

IS621: Embedded and Cyber-Physical Systems (CS637)

IS622: Computer-Aided Verification (CS652)

IS623: Convex Optimization (EE609)

IS624: Basics of Modern Control Systems (EE650)

IS625: Dynamics for Robotics