## BS-Economics & Statistical Science (ESS) Program IISER Tirupati Start of program: August 2025 Semester

IISER Tirupati will be launching a 4-year Bachelor of Science (BS) degree program starting Aug 2025 semester. The Academic and Curriculum committee with inputs from the Deans committee members has formulated the proposed Curriculum for this 4-year degree program.

This program is envisioned as a specialised stream apart from the regular BS-MS program. Therefore, the following general course and credit structure will apply to this program:

Semester I -	Semester IV	Semester V -	Graduation
III	(Mandatory &	VIII	
(Mandatory	Few	(Elective	
courses for all	Electives)	courses for all	
students)		students)	
_			-
Basic	Mandatory	Advanced	Program
Courses	courses	level courses	completes
From MTH,	+	in Economics	when the
BIO, CHM &	Extra credits	and Statistics	student
PHY	from other	topics	achieves
+	Disciplines		61 + 23 + 84
Interdiscipli		Students can	credits
nary (IDC)		choose based	
course		on their	= 168 credits
+		interests.	(min)
Economics			
& Statistics			Per Institute
courses		Average 21	policies, a
		credits per	student may
		semester	opt to
			continue into
			the MS
			program if
			qualified.
			-
Total	Total	Min. credits:	<b>BS-MS will</b>
credits: 61	credits: 23	84	require
			additional
			<b>36 thesis</b>
			credits



Tentative semester-wise curriculum is provided below.

## Semester 1

	Course	Title	Credits
	Code		
1	ESS111	Introduction to Economics	3
2	ESS112	Statistical Methods I	3
3	MTH111	Introduction to Calculus	3
4	IDC111	Mathematical Methods	3
		Electives (any two)	
5	BIO111	Biology I	3
6	CHM111	Chemistry I	3
7	PHY111	Physics I	3
		Total Credits	18

## **Semester 2**

	Course Code	Title	Credits
1	MTH121	Linear Algebra and its	3
2	ESS121	Multivariate Calculus	3
3	ESS122	Economics & Stat Lab I	4
4	CSA121	Introduction to Computer	3
		Programming	
5	HSS121	Reading, Writing and	2
		Communicating in English	
		Electives (any two)	
6	BIO121	Biology II	3
7	CHM121	Chemistry II	3
8	PHY121	Physics II	3
		Total Credits	21

## Semester 3

	Course	Title	Credits
	Code		
1	MTH211	Introduction to Probability	3
2	ESS211	Microeconomics I	3
3	ESS212	Macroeconomics I	3
4	ESS213	Economics & Stat Lab II	4
5	ESS214	Indian Knowledge Systems	3
		Electives (any two)	
6	BIO211	Biology III	3
7	CHM211	Chemistry III	3
8	PHY211	Physics III	3
		-	
		Total Credits	22

### **Semester 4**

	Course	Title	Credits
	Code		
1	ESS221	Microeconomics II	4
2	ESS222	Macroeconomics II	4
3	MTH222	Introduction to Real Analysis	4
4	ESS223	Statistical Methods II	4
5	ECS221	Fundamentals of Earth and	3
		Environmental Sciences	
		Electives (any one)	
6	PHY222	Mathematical Methods in Physics	4
		Ι	
7	MTH221	Introduction to Abstract Algebra	4
		Total Credits	23

#### Advanced Courses in Semester V to VIII (~21 credits each semester): 84 credits (min).

These can be chosen from the following course listing. Exact nature, semesters in which they will be offered, Instructor names and other pertinent details of each course will be finalised in due course of time. In each semester a student is permitted to take courses with a minimum of 18 credits and a maximum of 25 credits.

#### Semester V (Advanced Electives) Average 21 credits.

For Majoring in BS (Economics & Stat.Sci.) students would take the five mandatory courses listed below and may pick one elective from the tentative list below.

	Course	Title	Credits
	Code		
1	ESS311	Econometrics	4
2	ESS312	International Trade	4
3	ESS313	Statistical Inference	4
4	MTH312	Real Analysis	4
5	MTH314	Linear Algebra	4
		Elective(s)	
6	ESS314/	Numerical Methods	4
	MTH351		

#### Semester VI (Advanced Electives) Average 21 credits.

For Majoring in BS (Economics & Stat.Sci.) students would take the four mandatory courses listed below and pick one or two electives from the tentative list below.

	Course	Title	Credits
	Code		
1	ESS321	Design of Experiments	4
2	ESS322	Indian Economic Policy & Dev.	4
3	ESS323	Resource Economics	4
4	ESS324/	Optimization	4
	MTH361		
		<b>Electives (minimum one)</b>	
5	ESS325	Political Economy	4
6	ESS326	Financial Economics	4

# Semester VII & VIII (Advanced Electives) Average 21 credits, each semester.

Students should choose electives from the tentative list below.

#### **Semester VII**

	-		
	Course	Title	Credit
	Code		S
1	ESS411	Developmental Economics	4
2	ESS412	Public Finance and Public	4
		Policy	
3	ESS413	Regression and Time Series	4
		Analysis	
4	ESS414	Economics of Energy and	4
		Sustainability	
5	ESS415	Linear Statistical Models	4
6	MTH414	Ordinary Differential Equations	4
7	ESS416/	Introduction to Stochastic	4
	MTH451	Processes	
8	ESS417	Semester Project	4

#### **Semester VIII**

	Course	Title	Credits
	Code		
1	ESS421	Environmental Economics	4
2	ESS422	Data Science for Economics	4
3	ESS423	Energy Economics	4
4	ESS424	Game Theory	4
5	ESS425	Carbon Economy	4
6	ESS426	Bayesian Inference	4
7	ESS427	Non-parametric Inference	4
8	ESS428	Semester Project	4



#### **Assessments**

As per the guidelines for the existing BS-MS program, each course will have the following components: i) continuous assessment (with total weightage 30% - 40%), ii) mid-sem exam and end-sem exam (with total weightage 60% - 70%). The conduct of exams and continuous assessment will follow the Institute policies.

#### Exit Policy and Alignment with NEP-2020 Guidelines

The criteria for the exit policy for the BS-ESS program will be in accordance with that of the IISER Tirupati BS-MS program.

#### **Continuation to MS Program**

Any student successfully completing the BS-Economics and Stat. Sci. program may be deemed eligible (per qualifications set by the Acad. Comte. and endorsed by Senate, IISER Tirupati) to qualify for MS-thesis in a relevant topic and may thereby satisfy the BS-MS program qualifications.