

M.TECH. INDUSTRIAL INTELLIGENT SYSTEMS

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

Nowadays, the demand for intelligent systems in modern industries are growing in a fast pace. Hence it is essential to have a spectrum of engineering knowledge rather than confined one to meet the industrial challenges. In this view, the university is offering **M.Tech. Industrial Intelligent systems (IIS)** so as to impart integrated cutting-edge technology knowledge for the students. Intelligent systems are revolutionizing a variety of industries, including manufacturing, engineering, healthcare, transportation and logistics etc., M.Tech. IIS offers the next generation of solutions, powered by computing and artificial intelligence to meet the industrial challenges.

Programme Objectives:

To focus on Computational Intelligence, Embedded computing systems, and data interpretation for the development of industrial systems applications.

To provide the essential knowledge and practical experience needed to become an Intelligent Systems specialist both locally and globally.

Program Educational Objectives (PEOs):

- PEO 1** Graduates will be able to apply Intelligent Systems concepts, techniques and methods to solve varied problems across multiple domains.
- PEO 2** Graduates will be proficient in designing and developing Intelligent Systems through the effective use of knowledge and data engineering tools, so as to excel in modern industry, academia or research.
- PEO 3** Graduates will be manifested for their adherence to professional, social and ethical responsibilities in implementing Intelligent industrial solutions

Program Outcomes (POs):

- PO1** An ability to independently carry out research /investigation and development work to solve practical problems
- PO2** An ability to write and present a substantial technical report/document
- PO3** An ability to demonstrate a degree of mastery over the area of Industrial Intelligent Systems, with the mastery at a level higher than the requirements in the bachelor's in Electrical & Electronics Engineering
- PO4** An ability to apply mathematics, science, engineering fundamentals in modeling and designing Intelligent systems to solve industrial problems
- PO5** An ability to build competency and skills necessary to create an Intelligent System by appropriate methodology and modern engineering/IT tools used in the industry

PO6 An ability to develop professionalism by engaging in life-long learning along with societal, ethical and environmental responsibility.

CURRICULUM

First Semester

Course Code	Type	Course	L T P	Cr
20MA603	FC	Advanced Mathematics	3 1 0	4
20IS601	FC	Computer based Industrial Control	3 0 0	3
20IS602	FC	Advanced Control System	3 0 0	3
20IS611	SC	Data Analytics and Data Mining	2 0 2	3
20IS612	SC	Embedded System design	2 0 2	3
20IS613	SC	Modeling and Simulation Lab	0 0 3	1
18HU601	HU	Amrita Values Program*		P/F
18HU602	HU	Career Competency I*		P/F
				17

* Non-Credit Course

Second Semester

Course Code	Type	Course	L T P	Cr
20IS603	FC	Architecture of Intelligent Systems	3 0 0	3
20IS614	SC	Computational Intelligence	2 0 2	3
20IS615	SC	Fault Diagnostic Systems	3 0 2	4
	E	Elective - I	3 0 0	3
	E	Elective - II	3 0 0	3
20IS616	SC	Industrial Electronics Laboratory	1 0 2	2
20RM600	SC	Research Methodology	2 0 0	2

18HU603	HU	Career Competency II	0 0 2	1
				21

Third Semester

Course Code	Type	Course	L T P	Cr
	E	Elective – III*	3 0 0	3
	E	Elective – IV*	3 0 0	3
20IS798	P	Dissertation		8
				14

*Elective-III and Elective-IV can be MOOC courses.

Fourth Semester

Course Code	Type	Course	L T P	Cr
20IS799	P	Dissertation		12

Total: 64

List of Courses Foundation Core

Course Code	Course	L T P	Cr
20MA603	Advanced Mathematics	3 1 0	4
20IS601	Computer based Industrial Control	3 0 0	3
20IS602	Advanced Control System	3 0 0	3
20IS603	Architecture of Intelligent Systems	3 0 0	3
Total			13

Subject Core

Course Code	Course	L T P	Cr
20IS611	Data Analytics and Data mining	2 0 2	3
20IS612	Embedded System design	2 0 2	3
20IS613	Modeling and Simulation Lab	0 0 3	1
20IS614	Computational Intelligence	2 0 2	3
20IS615	Fault Diagnostic Systems	3 0 1	4
20IS616	Industrial Electronics Laboratory	1 0 2	2
20RM600	Research Methodology	2 0 0	2
Total			18

Electives

Course Code	Course	L T P	Cr
20IS701	Industrial IoT	3 0 0	3
20IS702	Real time Operating Systems	3 0 0	3
20IS703	Transducer Design	3 0 0	3
20IS704	Electronic data converters	3 0 0	3
20IS705	Hardware Software Co-design	3 0 0	3
20IS706	Reconfigurable Computing	3 0 0	3
20IS707	Industrial Robotics	3 0 0	3
20IS708	Human Machine Interface	3 0 0	3
20IS709	Communication systems for industrial networking	3 0 0	3
20IS710	Artificial Intelligence for Smart Grids	3 0 0	3
20IS711	Cyber Security For Industrial Systems	3 0 0	3

20IS712	Deep Learning	3 0 0	3
20IS713	Operations Research	3 0 0	3

Project Work

Course Code	Course	L T P	Cr
20IS798	Dissertation		8
20IS799	Dissertation		12