IPS Academy
Institute of Engineering & Science, Indore
Mechanical Engineering Department
M. Tech (ROBOTICS), III Sem

S. No.	Subject Code	Subject Name	Maximum Marks Allotted					Total Marks	Contact Hours per week			Total Credits
			Theory			Practical						
			End Sem.	Mid Sem. Exam.	Quiz/ Assignment	End Sem	Term work		L	T	P	
							Lab Work & Sessional					
1.	PSEC-MT301	Program Specific Elective-III	70	20	10	-	-	100	3	0	0	3
2.	LLC-MT301	Liberal Learning Course - I	-	-	-	-	-	-	1	0	0	1
3.	SBC-MT301	SBC – Dissertation Phase- I	-	-	-	120	80	200	0	0	20	10
		Total	**70**	**20**	**10**	**120**	**80**	**300**	**4**	**0**	**20**	**14**

*MST: Minimum of two mid semester tests to be conducted.   L: Lecture   T: Tutorial   P: Practical

S. No.	Program Specific Elective-II
1	PSEC-MT301 (A) Artificial Intelligence
2	PSEC-MT301 (B) Machine Learning
3	PSEC-MT301 (C) Python

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PSEC-MT301	Program Specific Elective-III	3L :0T : 0P(03 hrs)	03 Credits

Course Objective:
This course provides advance and latest knowledge of the specific topic. MOOC course offered by IITs and other institutions will enhance the knowledge of students.

Proposed list of PSEC (Suggestive List)

1. Foundations of Cognitive Robotics
   By Prof. Bishakh Bhattacharya | IIT Kanpur

2. Introduction to robotics
   By Prof. Asokan T, Prof. Balaraman Ravindran, Prof. Krishna Vasudevan | IIT Madras

3. Robotics
   By Prof. Dilip Kumar Pratihar | IIT Kharagpur

4. Fundamentals Of Artificial Intelligence
   By Prof. Shyamanta M. Hazarika | IIT Guwahati

5. Artificial Intelligence Search Methods For Problem Solving
   By Prof. Deepak Khemani | IIT Madras

6. Essential Mathematics for Machine Learning
   By Prof. Sanjeev Kumar, Prof. S. K. Gupta | IIT Roorkee

7. Introduction to Machine Learning - IITKGP
   By Prof. Sudeshna Sarkar | IIT Kharagpur

8. Python 3.4.3
   By Prof Kannan Moudgalya Indian Institute of Technology Bombay

LLC-MT301	Liberal Learning Course-I	1L : 0T : 0P (01hrs)	Credits:01

Course Objective:
Liberal education is an approach to promote integration of learning across the curriculum and between academic and experiential learning, in order to develop specific learning outcomes that are essential for work, citizenship, and life.

Course Content:
Proposed Liberal Learning Course (Suggestive List)
- Agriculture (Landscaping, Farming, etc.)
- Business (Management, Entrepreneurship, etc.)
- Defence (Study about functioning of Armed Forces)
- Education (Education System, Policies, Importance, etc.)
- Philosophy
- Social Sciences (History, Political Science, Geography, Civics, Economics, etc.)
- Personality Development

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SBC-MT301	Dissertation Phase- I	0L:0T:20P (20 Hrs)	10 Credits

Course Objective:

The objective of this course is
1. To develop and test one's ability to learn independently.
2. To apply the concepts and theories learnt in previous years of study and work placements.
3. To test one's ability to complete a substantial piece of work to a laid-down standard and within a given time period.
4. To Identifying a topic and developing a research question or set of questions within an academically sound framework connected to specialization.
5. To investigate the chosen topic in depth. This implies collecting and reviewing literature (e.g. books, papers, journals, websites, proceedings etc.) and understanding and interpreting the most up-to-date concepts and theories of your chosen academic field and/or thesis topic.

Outline of the Course:
1. The Dissertation shall be related to the major field of his/her PG specialization work.
2. The Dissertation should be one of the major pieces of evidence that students are familiar with or that student wants to be familiar with. It should reflect your specialist subject by means of deep and sustained study.
3. The dissertation work shall be carried out by each candidate independently during the third and forth semester under the guidance of one of the faculty members of the Department. If the project work is of inter-disciplinary nature, a co-guide shall be taken for the same or any other relevant Department.
4. Dissertation Phase-I includes literature review, required theoretical input, study and comparison of various approaches for the proposed dissertation work.

Instructional Method And Pedagogy
1. Department review committees should be formed, to review and give marks.
2. Student has to submit a dissertation proposal indicating the tentative title and broad outline of the proposed work and the name(s) of the supervisor(s) along-with their concurrence in writing within 30 days from the starting of the third semester.
3. Dissertation Phase-I will be evaluated at least once during the semester and at the end of the semester as a part of continuous evaluation.
4. After successful completion of Dissertation Phase-I only students are allowed for Mid Semester Thesis Progress Review and subsequently Dissertation Phase-II.

Students learning outcomes:
1. At the end of the course the student gets exposure to construct and justify research questions related to the topic.
2. Each student will be in a position to design a research investigation that incorporates appropriate theoretical approaches, conceptual models, and a review of the existing literature.
3. Students will learn to structure a discussion in a coherent and convincing way by synthesizing the material in the context of the research questions.
4. Students will be having sufficient collection of the literature/experimental data for the implantation/experimentation in Dissertation Phase-II.

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Guidelines:

1. Dissertation Phase – I (DP-I) report should comprise of (and not limited to)
   - (i)   Literature review citing minimum 10 (good journal/conference) papers
   - (ii)   Scope of thesis work
   - (iii)   Research Gap
   - (iv)   Problem Statement
   - (v)   Overall Work Plan for various stages including Dissertation Phase I and Phase II, etc.
2. The DP-I report should be submitted at the time of DP-I examination, along with a detailed Power point presentation of work done. It is expected that about 40% work is completed at the time of examination.
3. The continuous evaluation should comprise of regularity/attendance, problem identification / significance of the work, quality and quantity of the proposed work.
4. Duly signed (by Guide(s) and Student) DP-I report should be sent to the external examiner.