ANNA UNIVERSITY, CHENNAI
AFFILIATED INSTITUTIONS
B.TECH. ARTIFICAL INTELLIGENCE AND DATA SCIENCE
REGULATIONS – 2017
CHOICE BASED CREDIT SYSTEM

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

1. To provide graduates with the proficiency to utilize the fundamental knowledge of basic sciences, mathematics, Artificial Intelligence, data science and statistics to build systems that require management and analysis of large volume of data.
2. To enrich graduates with necessary technical skills to pursue pioneering research in the field of AI and Data Science and create disruptive and sustainable solutions for the welfare of ecosystems.
3. To enable graduates to think logically, pursue lifelong learning and collaborate with an ethical attitude in a multidisciplinary team.
4. To enable the graduates to design and model AI based solutions to critical problem domains in the real world.
5. To enrich the innovative thoughts and creative ideas of the graduates for effective contribution towards economy building.

PROGRAM OUTCOMES (POs) ENGINEERING GRADUATES WILL BE ABLE TO:

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and Artificial Intelligence and Data Science basics to the solution of complex engineering problems.

2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one‘s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes

1. Graduates should be able to evolve AI based efficient domain specific processes for effective decision making in several domains such as business and governance domains.
2. Graduates should be able to arrive at actionable Fore sight, Insight, hind sight from data for solving business and engineering problems
3. Graduates should be able to create, select and apply the theoretical knowledge of AI and Data Analytics along with practical industrial tools and techniques to manage and solve wicked societal problems
4. Graduates should be capable of developing data analytics and data visualization skills, skills pertaining to knowledge acquisition, knowledge representation and knowledge engineering, and hence capable of coordinating complex projects.
5. Graduates should be able to carry out fundamental research to cater the critical needs of the society through cutting edge technologies of AI.

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I - VIII SEMESTERS CURRICULUM
SEMESTER I

Sl. No.	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
THEORY								
1.	HS8151	Communicative English	HS	4	4	0	0	4
2.	MA8151	Engineering Mathematics – I	BS	4	4	0	0	4
3.	PH8151	Engineering Physics	BS	3	3	0	0	3
4.	CY8151	Engineering Chemistry	BS	3	3	0	0	3
5.	GE8151	Problem Solving and Python Programming	ES	3	3	0	0	3
6.	GE8152	Engineering Graphics	ES	6	2	0	4	4
PRACTICALS								
7.	GE8161	Problem Solving and Python Programming Laboratory	ES	4	0	0	4	2
8.	BS8161	Physics and Chemistry Laboratory	BS	4	0	0	4	2
			TOTAL	**31**	**19**	**0**	**12**	**25**

SEMESTER II

Sl. No.	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
THEORY								
1.	HS8251	Technical English	HS	4	4	0	0	4
2.	MA8252	Linear Algebra	BS	4	4	0	0	4
3.	AD8251	Data Structures Design	PC	3	3	0	0	3
4.	GE8291	Environmental Science and Engineering	BS	3	3	0	0	3
5.	BE8255	Basic Electrical, Electronics, and Measurement Engineering	ES	3	3	0	0	3
6.	AD8252	Digital Principles and Computer Organization	ES	5	3	0	2	4
PRACTICALS								
7.	GE8261	Engineering Practices Laboratory	ES	4	0	0	4	2
8.	AD8261	Data Structures Design Laboratory	PC	4	0	0	4	2
			TOTAL	**30**	**20**	**0**	**10**	**25**

SEMESTER III

Sl. No.	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
THEORY								
1.	MA8351	Discrete Mathematics	BS	4	4	0	0	4
2.	AD8301	Introduction to Operating Systems	PC	5	3	0	2	4
3.	AD8302	Fundamentals of Data Science	PC	3	3	0	0	3
4.	CS8392	Object Oriented Programming	PC	3	3	0	0	3
5.	AD8351	Design and Analysis of Algorithms	PC	5	3	0	2	4
PRACTICALS								
6.	AD8311	Data Science Laboratory	PC	4	0	0	4	2
7.	CS8383	Object Oriented Programming Laboratory	PC	4	0	0	4	2
8.	HS8381	Interpersonal Skills/Listening & Speaking	HS	2	0	0	2	1
			TOTAL	**30**	**16**	**0**	**14**	**23**

SEMESTER IV

Sl. No.	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
THEORY								
1.	MA8391	Probability and Statistics	BS	4	4	0	0	4
2.	AD8401	Database Design and Management	PC	3	3	0	0	3
3.	AD8402	Artificial Intelligence I	PC	3	3	0	0	3
4.	AD8403	Data Analytics	PC	3	3	0	0	3
5.		Professional Elective I	PE	3	3	0	0	3
PRACTICALS								
6.	AD8411	Database Design and Management Laboratory	PC	4	0	0	4	2
7.	AD8412	Data Analytics Laboratory	PC	4	0	0	4	2
8.	AD8413	Artificial Intelligence – I Laboratory	PC	4	0	0	4	2
9.	HS8461	Advanced Reading and Writing	HS	2	0	0	2	1
			TOTAL	**30**	**16**	**0**	**14**	**23**

SEMESTER V

Sl. No.	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
THEORY								
1.	AD8501	Optimization Techniques	PC	4	4	0	0	4
2.	CW8691	Computer Networks	PC	5	3	0	2	4
3.	AD8502	Data Exploration and Visualization	PC	5	3	0	2	4
4.	AD8551	Business Analytics	PC	3	3	0	0	3
5.	AD8552	Machine Learning	PC	3	3	0	0	3
6.		Open Elective I	OE	3	3	0	0	3
PRACTICALS								
7.	AD8511	Machine Learning Laboratory	PC	4	0	0	4	2
8.	AD8512	Mini Project on Data Sciences Pipeline	PC	4	0	0	4	2
			TOTAL	**31**	**19**	**0**	**12**	**25**

SEMESTER VI

Sl. No	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
THEORY								
1.	AD8601	Artificial Intelligence II	PC	3	3	0	0	3
2.	AD8602	Data and Information Security	PC	3	3	0	0	3
3.	IT8501	Web Technology	PC	3	3	0	0	3
4.		Professional Elective II	PE	3	3	0	0	3
5.		Professional Elective III	PE	3	3	0	0	3
PRACTICALS								
6.	IT8511	Web Technology Laboratory	PC	4	0	0	4	2
7.	AD8611	Artificial Intelligence - II Laboratory	PC	4	0	0	4	2
8.	HS8581	Professional Communication	HS	2	0	0	2	1
9.	AD8612	Socially relevant Project	PC	4	0	0	4	2
			TOTAL	**29**	**15**	**0**	**14**	**22**

SEMESTER VII

Sl. No	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
THEORY								
1.	AD8701	Deep Learning	PC	3	3	0	0	3
2.	AD8702	Text Analytics	PC	3	3	0	0	3
3.	AD8703	Basics of Computer Vision	PC	3	3	0	0	3
4.	AD8704	Big Data Management	PC	5	3	0	2	4
5.	AD8705	AI and Robotics	PC	5	3	0	2	4
6.		Open Elective II	OE	3	3	0	0	3
PRACTICALS								
7.	AD8711	Deep Learning Laboratory	PC	4	0	0	4	2
8.	AD8712	Mini Project on Analytics	PC	4	0	0	4	2
			TOTAL	**30**	**18**	**0**	**12**	**24**

SEMESTER VIII

Sl. No.	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
THEORY								
1.		Professional Elective IV	PE	3	3	0	0	3
2.		Professional Elective V	PE	3	3	0	0	3
PRACTICALS								
3.	AD8811	Project Work	PC	20	0	0	20	10
			TOTAL	**26**	**6**	**0**	**20**	**16**

TOTAL NO. OF CREDITS: 183

PROFESSIONAL ELECTIVES (PE)

SEMESTER IV, ELECTIVE - I

Sl. No.	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
1.	EC8691	Microprocessors and Microcontrollers	PE	3	3	0	0	3
2.	AD8001	Software Development Processes	PE	3	3	0	0	3
3.	AD8002	Health Care Analytics	PE	3	3	0	0	3
4.	AD8003	Mobile Applications Development	PE	3	3	0	0	3
5.	AD8004	Parallel Computing	PE	3	3	0	0	3

SEMESTER VI, ELECTIVE - II

Sl. No.	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
1.	AD8005	Embedded Systems and Programming	PE	3	3	0	0	3
2.	CW8591	Software Architecture	PE	3	3	0	0	3
3.	AD8006	Engineering Predictive Analytics	PE	3	3	0	0	3
4.	CS8603	Distributed Systems	PE	3	3	0	0	3
5.	CS8072	Agile Methodologies	PE	3	3	0	0	3

SEMESTER VI, ELECTIVE - III

Sl. No.	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
1.	CS8081	Internet of Things	PE	3	3	0	0	3
2.	AD8007	Software Testing and Quality Assurance	PE	3	3	0	0	3
3.	CS8791	Cloud Computing	PE	3	3	0	0	3
4.	CS8085	Social Network Analysis	PE	3	3	0	0	3
5.	AD8008	Web Services and API Design	PE	3	3	0	0	3

SEMESTER VIII, ELECTIVE - IV

Sl. No.	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
1.	AD8009	Operations and Supply Chain Management	PE	3	3	0	0	3
2.	AD8010	Speech Processing and Analytics	PE	3	3	0	0	3
3.	AD8011	Cyber Security	PE	3	3	0	0	3
4.	AD8012	Nonlinear Optimization	PE	3	3	0	0	3
5.	AD8013	Ethics Of Artificial Intelligence	PE	3	3	0	0	3

SEMESTER VIII, ELECTIVE - V

Sl. No.	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
1.	AD8014	Engineering Economics	PE	3	3	0	0	3
2.	AD8081	Cognitive Science and Analytics	PE	3	3	0	0	3
3.	MG8591	Principles of Management	PE	3	3	0	0	3
4.	AD8015	Bio-inspired Optimization Techniques	PE	3	3	0	0	3
5.	AD8016	Information Extraction and Retrieval	PE	3	3	0	0	3