॥ सा विद्या या विमुक्तये ॥

स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ, नांदेड

'ज्ञानतीर्थ', विष्णुपुरी, नांदेड – ४३१ ६०६ (महाराष्ट्र राज्य) भारत

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED

'Dnyanteerth', Vishnupuri, Nanded - 431 606 (Maharashtra State) INDIA

स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ, नांदेड

Established on 17th September, 1994, Recognized By the UGC U/s 2(f) and 12(B), NAAC Re-accredited with'B++' grade

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विज्ञान व तंत्रज्ञान विद्याशाखे अंतर्गत राष्ट्रीय शैक्षणिक धोरण २०२० नुसार पदवी द्वितीय वर्षाचे अभ्यासक्रम (Syllabus) शैक्षणिक वर्ष २०२५–२६ पासून लागू करण्याबाबत.

प रि प त्र क

या परिपत्रकान्वये सर्व संबंधितांना कळविण्यात येते की, दिनांक २७ मे २०२५ रोजी संपन्न झालेल्या मा. विद्यापरिषद बैठकीतील विषय क्रमांक १६/६१–२०२५ च्या ठरावानुसार विज्ञान व तंत्रज्ञान विद्याशाखेतील राष्ट्रीय शैक्षणिक धोरण–२०२० नुसारचे पदवी द्वितीय वर्षाचे अभ्यासक्रम (Syllabus) शैक्षणिक वर्ष २०२५–२६ पासून लागू करण्यास मा. विद्यापरिषदेने मान्यता प्रदान केली आहे. त्यानुसार विज्ञान व तंत्रज्ञान विद्याशाखेतील बी. एस्सी द्वितीय व तृतीय वर्षाचे खालील विषयाचे अभ्यासक्रम (Syllabus) शैक्षणिक वर्ष २०२५–२६ पासून लागू करण्यात येत आहेत.

01	B.Sc. Biotechnology II year (NMD College Hingoli)
02	B.Sc. Biotechnology III year (NMD College Hingoli)
03	B.Sc. Computer Science II year (NMD College Hingoli)
04	B.Sc. Computer Science III year (NMD College Hingoli)

सदरील परिपत्रक व अभ्यासक्रम प्रस्तुत विद्यापीठाच्या **www.srtmun.ac.in** या संकेतस्थळावर उपलब्ध आहेत. तरी सदरील बाब ही सर्व संबंधितांच्या निदर्शनास आणून द्यावी, ही विनंती.

'ज्ञानतीर्थ' परिसर,
विष्णुपुरी, नांदेड – ४३१ ६०६.
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दिनांक १६.०६.२०२५

सहाय्यक कुलसचिव
शैक्षणिक (१–अभ्यासमंडळ) विभाग

प्रत : माहितीस्तव तथा कार्यवाहीस्तव.

१) मा. कुलगुरू महोदयांचे कार्यलय, प्रस्तुत विद्यापीठ.
२) मा. प्र. कुलगुरू महोदयांचे कार्यलय, प्रस्तुत विद्यापीठ.
३) मा. आधिष्ठाता, विज्ञान व तंत्रज्ञान विद्याशाखा, प्रस्तुत विद्यापीठ.
४) मा. संचालक, परीक्षा व मुंल्यमापन मंडळ, प्रस्तुत विद्यापीठ.
५) मा. प्राचार्य, न्यु मॉडल डिग्री कॉलेज हिंगोली, प्रस्तुत विद्यापीठ.
६) सिस्टीम एक्सपर्ट, शैक्षणिक विभाग, प्रस्तुत विद्यापीठ. याना देवून कळविण्यात येते की, अभ्यासक्रम संकेतस्थळावर प्रसिध्द करण्यात यावेत.

SWAMI RAMANAND TEERTH
MARATHWADA UNIVERSITY, NANDED - 431 606 (MS)

(Structure and Syllabus of Four Years Multidisciplinary Degree Program with Multiple Entry and Exit Option)

FOUR YEAR BACHELOR OF SCIENCE

COMPUTER SCIENCE

Under the Faculty of Science and Technology

(Revised as per the Govt. of Maharashtra circular dt. 13th March 2024)

Effective from Academic year **2025 – 2026**

(As per NEP-2020)

Details of the Board of Studies Members in the subject Computer Science under the faculty of Science & Technology of S.R.T.M. University, Nanded

Sr. No.	Name of the Member	Designation	Sr. No	Name of the Member	Designation
1	Prof. Girish V. Chowdhary Professor School of Comp. Sci., S.R.T.M.University, Nanded. Mobile-9421452364 E-Mail- girish.chowdhary@gmail.com	Chairman	7	Dr. Ravindra S. Hegadi Associate Professor Department of Computer science Central university of Karnataka . Kadaganchi , Kalaburagi Mobile 94408023871, E-Mail rshegadi@gmail.com, rshegadi@cuk.ac.in	Member
2	Dr. Santosh D Khamitkar Professor School of Comp. Sci., S.R.T.M.University, Nanded. Mobile-9421458081 EMail-s_khamitkar@yahoo.com	Member	8	Dr. N. P. Bhosale Department of Computer Science Indira Gandhi National Tribul University, Amarkantak-484887, Madyapradesh.	Member
3	Dr. Vikash Tukaram Humbe Assistant Professor School of Technology., S.R.T.M.University, Sub Campous Ausa Road Peth Latur. 415531 Mobile-9326792524 EMail-vikashhumbe@gmail.com	Member	9	Dr. (Mrs.) Maya Ingle Department of Computer Science Indore Institute of Science and Technology, Opp. I.I.M. Pithampur Road, Rau, Indore-453331, M.P.	Member
4	Dr. Mahendra Pundlikrao Dhore Principal Shivaji Science Nagpur 440012 Mobile-9423103043 Email-mpdhore@rediffmail.com	Member	10	Mr.Kaiwalya Katyarmak Manager, Cognizant's Quality Assurance and Engineering Group , Pune	Member
5	Dr. R. R. Manza Associate Professor Department of Computer Science and Information Technology, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad. Mobile- 9421308853 Email- manzaramesh@gmail.com	Member	11	Mr. Sanjay S. Kurundkar Copgemini India Pvt Ltd.Sr. Manager FSGBU Global Testing Practice Core Team Member	Member
6	Dr. Mohammad Atique Mohammad Junaid. Professor Department of Computer Science & Engineering , Sant Gadge Baba Amravati University Amravati-44602 Mobile: 09823724560 E-mail: mohammadatique@sgbau.ac.in	Member			Member
INVITEE MEMBER					
12	Dr. Premal B. Nirpal Assistant Professor Department of Computer Science S.R.T.M.University, Nanded's New Model Degree College, Hingoli-431513 Mobile: 8055144201 Mail: premal.nirpal@gmail.com	Member			

From the Desk of the Dean, Faculty of Science and Technology

Swami Ramanand Teerth Marathwada University, Nanded, enduring to its vision statement "***Enlightened Student: A Source of Immense Power",*** is trying hard consistently to enrich the quality of science education in its jurisdiction by implementing several quality initiatives. Revision and updating curriculum to meet the standard of the courses at national and international level, implementing innovative methods of teaching-learning, improvisation in the examination and evaluation processes are some of the important measures that enabled the University to achieve the **3Es, the *equity, the efficiency and the excellence*** in higher education of this region. To overcome the difficulty of comparing the performances of the graduating students and also to provide mobility to them to join other institutions the University has adopted the *cumulative grade point average* (CGPA) system in the year 2014-2015. Further, following the suggestions by the UGC and looking at the better employability, entrepreneurship possibilities and to enhance the latent skills of the stakeholders the University has adopted the *Choice Based Credit System* (CBCS) in the year 2018-2019 at graduate and post-graduate level. This provided flexibility to the students to choose courses of their own interests. To encourage the students to opt the world-class courses offered on the online platforms like, NPTEL, SWAYM, and other MOOCS platforms the University has implemented the credit transfer policy approved by its Academic Council and also has made a provision of reimbursing registration fees of the successful students completing such courses.

SRTM University has been producing a good number of high caliber graduates; however, it is necessary to ensure that our aspiring students are able to pursue the right education. Like the engineering students, the youngsters pursuing science education need to be equipped and trained as per the requirements of the R&D institutes and industries. This would become possible only when the students undergo studies with an updated and evolving curriculum to match global scenario.

Higher education is a dynamic process and in the present era the stakeholders need to be educated and trained in view of the self-employment and self-sustaining skills like start-ups. Revision of the curriculum alone is not the measure for bringing reforms in the higher education, but invite several other initiatives. Establishing industry-institute linkages and initiating internship, on job training for the graduates in reputed industries are some of the important steps that the University would like to take in the coming time. As a result, revision of the curriculum was the need of the hour and such an opportunity was provided by the New Education Policy 2020. National Education Policy 2020 (NEP 2020) aims at equipping students with knowledge, skills, values, leadership qualities and initiates them for lifelong learning. As a result the students will acquire expertise in specialized areas of interest, kindle their intellectual curiosity and scientific temper, and create imaginative individuals.

The curriculum given in this document has been developed following the guidelines of NEP-2020 and is crucial as well as challenging due to the reason that it is a transition from general science-based to the discipline-specific-based curriculum. All the recommendations of the ***Sukanu Samiti*** given in the **NEP Curriculum Framework-2023** have been followed, keeping the disciplinary approach with rigor and depth, appropriate to the

comprehension level of learners. All the Board of Studies (BoS) under the Faculty of Science and Technology of this university have put in their tremendous efforts in making this curriculum of international standard. They have taken care of maintaining logical sequencing of the subject matter with proper placement of concepts with their linkages for better understanding of the students. We take this opportunity to congratulate the Chairman(s) and all the members of various Boards of Studies for their immense contributions in preparing the revised curriculum for the benefits of the stakeholders in line with the guidelines of the Government of Maharashtra regarding NEP-2020. We also acknowledge the suggestions and contributions of the academic and industry experts of various disciplines.

We are sure that the adoption of the revised curriculum will be advantageous for the students to enhance their skills and employability. Introduction of the mandatory ***On Job Training, Internship*** program for science background students is praise worthy and certainly help the students to imbibe first-hand work experience, team work management. These initiatives will also help the students to inculcate the workmanship spirit and explore the possibilities of setting up of their own enterprises.

Dr. M. K. Patil
Dean
Faculty of Science and Technology

Swami Ramanand Teerth Marathwada University, Nanded

Faculty of Science & Technology

Structure for Four Year Multidisciplinary Degree Program with Multiple Entry and Exit

Subject: COMPUTER SCIENCE

Year & Level	Semester	Option 1 *(From the same faculty)*	Option 2 *(From the same faculty)*	Option 3 *(From the same faculty)*	Generic Elective (GE) *(Select from Basket 3 of faculties other than science and technology)*	Vocational & Skill Enhancement Course (VSEC)	Ability Enhancement Course (AEC) (Basket 4) Value Education Courses (VEC) / Indian Knowledge System (IKS) (Basket 5) *(Common across faculty)*	Field Work / Project/ Internship/ OJT/ Apprenticeship / Case Study Or Co-curricular Courses (CC) (Basket 6 for CCC) *(Common across faculty)*	Credits	Total Credits
1	2	3	4	5	6	7	8	9	10	11
2 (5.0)	III	**Major 1(T-2cr)** **Major 2 (T-2cr)** **Major 3 (P-2cr)** **Major 4 (P-2cr)** **8 Credits**	**Minor 1 (T-2cr)** **Minor 2** **(P-2cr)** **4 Credits**	--	**GE 3** **2Credits**	**VSC 1** **2Credits**	**AECENG 3:** English (2Cr) **ACEMIL 3:** Marathi/Hindi (2Cr) **4 Credits**	**CCC(2Cr)** **(NCC/NSS/SPT/ CLS/ HWS/YGE/FIT)** **2Credits**	22	88
	IV	**Major 5 (T-2cr)** **Major 6 (T-2cr)** **Major 7 (P-2cr)** **Major 8 (P-2cr)** **8 Credits**	**Minor 1 (T-2cr)** **Minor 2 (P-2cr)** **4 Credits**	--	**GE 4** **2Credits**	**VSC 2** **2Credits**	**AECENG 4:** English (2Cr) **ACEMIL 4:** Marathi/Hindi (2Cr) **4 Credits**	--	22	
	Cum. Cr.	**24**	**16**	**08**	**08**	**08**	**22**	**02**	**88**	
Exit option: UG Diploma in Major and Minor on completion of 88 credits and additional 4 credits NSQF/ Internship in Major Subject										

Basket 1: List of Major subjects in Science (DSC)

* Students willing to pursue their bachelors in the Faculty of Science and Technology shall choose any one of the following as a Major course (DSC;

Semester	BOS proposing Minor	Details of Minor Subject	
		CODE	Title of the Corse
Semester III	Adhoc Board in Comp. Sci. NMDC	Opt 11, Opt 21, Opt 31	Computer Science
Semester IV	Adhoc Board in Comp. Sci. NMDC	Opt 13, Opt 23, Opt 33	Computer Science

Basket 2: List of Minor subject in Science (DSM)

Students from the Faculty of Science and Technology have freedom to choose either of the following as a Minor Course

Semester	BOS proposing Minor	Details of Minor Subject	
		CODE	Title of the Corse
Semester III	Adhoc Board in Comp. Sci. NMDC	SBCSC3101	Computer Science
Semester IV	Adhoc Board in Comp. Sci. NMDC	SBCSC3151	Computer Science

Basket 3: List of Generic Elective courses (GE)

Note*: Each BOS shall suggest Generic Elective Courses (at least one each for Group A and Group B) for semesters I and II*

* Students will choose one GE course each from Group A and B of Basket 2 (other than subjects DSC and DSM in col. 3 and 4).

Semester	BOS proposing GE	Group A	
		CODE	Title of the Corse
Semester III	Adhoc Board in Comp Sci, NMDC	**GE 3**	
Semester IV	Adhoc Board in Comp Sci, NMDC	**GE 4**	

Basket 4: Modern India Language

Semester	BOS proposing GE	Details of the Course	
		CODE	Title of the Corse
Semester III	Adhoc Board in Comp Sci, NMDC	**AECENG 3**	English
Semester III	Adhoc Board in Comp Sci, NMDC	**ACEMIL 3**	Marathi, Hindi, Urdu, Kannada, Pali.
Semester IV	Adhoc Board in Comp Sci, NMDC	**AECENG 4**	English
Semester IV	Adhoc Board in Comp Sci, NMDC	**ACEMIL 4**	Marathi, Hindi, Urdu, Kannada, Pali.

Basket 6: Co-curricular Courses

Semester	BOS proposing GE	Details of the Course	
		CODE	Title of the Corse
Semester III	Adhoc Board in Comp Sci, NMDC	CCC	(NCC/NSS/SPT/ CLS/ HWS/YGE/FIT)

B. Sc. CS Second Year Semester III *(Level 5.0)*

Teaching Scheme

	Course Code	Course Name	Credits Assigned			Teaching Scheme (Hrs/ week)	
			Theory	Practical	Total	Theory	Practical
Optional 1	**Major 1**	Java Programming- I	02	--	**08**	02	--
	Major 2	Java Programming- I (Practical)	-	02		--	04
	Major 3	Data Structure	02	--		02	--
	Major 4	Unix Operating System (practical)	-	02		--	04
Optional 2	**Minor 1**	Computer Organization	02	--	**04**	02	--
	Minor 2	Computer Organization (practical)	-	02		--	04
Generic Elective (from other Faculty)	GE 3	Cyber Ethics	02	--	**02**	02	--
Skill Based Course (related to Major)	VSC 1	Web Services	--	02	**02**	--	04
Ability Enhancement Course (AEC) (Basket 4) Value Education Courses (VEC) / Indian Knowledge System (IKS)	**AECENG 3**	L1- Compulsory English	02	--	**02**	02	--
	ACEMIL 4	Marathi/ Hindi	02	--	**02**	02	--
Field Work / Project/ Internship/ OJT/ Apprenticeship / Case Study Or Co-curricular Courses (CC) (Basket 6 for CCC)	CCC	(NCC/NSS/SPT/CLS/ HWS/YGE/FIT)	--	02	**02**	--	04
Total Credits			**12**	**10**	**22**	**12**	**20**

B. Sc. CS Second Year Semester III *(Level 5.0)*

Examination Scheme

[20% Continuous Assessment (***CA***) and 80% End Semester Assessment (***ESA***)]

(For illustration we have considered a paper of 02 credits, 50 marks, need to be modified depending on credits assigned to individual paper)

Subject (1)	Course Code (2)	Course Name (3)	Theory				Practical		Total Col (6+7)/ Col (8+9) (10)
			Continuous Assessment(CA)			ESA			
			Test I (4)	Test II (5)	Avg of (T1+T2)/2 (6)	Total (7)	CA (8)	ESA (9)	
Optional 1	**Major 1**	Java Programming- I	10	10	10	40	--	--	50
	Major 2	Java Programming- I (Practical)	--	--	--	--	20	30	50
	Major 3	Data Structure	10	10	10	40	--	--	50
	Major 4	Unix Operating System (practical)	--	--	--	--	20	30	50
Optional 2	**Minor 1**	Computer Networks	10	10	10	40	--	--	50
	Minor 2	Computer Networks (practical)	--	--	--	--	20	30	50
Generic Elective (from other Faculty)	GE 3	Office Automation	10	10	10	40	--	--	50
Skill Based Course (related to Major)	VSC 1	Web Services	--	--	--	--	20	30	50
Ability Enhancement Course (AEC) (Basket 4)	**AECENG 3**	L1- Compulsory English	10	10	10	40	--	--	50
Value Education Courses (VEC) / Indian Knowledge System (IKS)	**ACEMIL 3**	Marathi/ Hindi	10	10	10	40	--	--	50
Field Work / Project/ Internship/ OJT/ Apprenticeship / Case Study Or Co-curricular Courses (CC) (Basket 6 for CCC)	CCC	(NCC/NSS/SPT/ CLS/ HWS/YGE/FIT)	10	10	10	40	--	--	50

B. Sc. CS Second Year Semester IV *(Level 5.0)*

Teaching Scheme

	Course Code	Course Name	Credits Assigned			Teaching Scheme (Hrs/ week)	
			Theory	Practical	Total	Theory	Practical
Optional 1	**Major 5**	Java Programming- II	02	--	**08**	02	--
	Major 6	Java Programming- II (practical)	-	02		--	04
	Major 7	Software Engineering	02	--		02	--
	Major 8	Software Engineering (Practical)	-	02		--	04
Optional 2	**Minor 3**	Mathematical Foundation for Computer Science	02	--	**04**	02	--
	Minor 4	Mathematical Foundation (practical)	-	02		--	04
Generic Elective (from other Faculty)	GE 4	Cyber Security-II	02	--	**02**	02	--
Skill Based Course (related to Major)	VSC 4	Swayam/NPTEL	--	02	**02**	--	04
Ability Enhancement Course (AEC) (Basket 4) Value Education Courses (VEC) / Indian Knowledge System (IKS)	**AECENG 4**	L1- Compulsory English	02	--	**02**	02	--
	ACEMIL 4	Marathi/ Hindi	02	--	**02**	02	--
	EVS	EVS	02	--	**02**	02	--
Total Credits			**14**	**08**	**22**	**12**	**20**

B. Sc. CS Second Year Semester IV *(Level 5.0)*

Examination Scheme

[20% Continuous Assessment (***CA***) and 80% End Semester Assessment (***ESA***)]

(For illustration we have considered a paper of 02 credits, 50 marks, and need to be modified depending on credits of individual paper)

Subject (1)	Course Code (2)	Course Name (3)	Theory				Practical		Total Col (6+7)/ Col (8+9) (10)
			Continuous Assessment(CA)			ESA			
			Test I (4)	Test II (5)	Avg of (T1+T2)/2 (6)	Total (7)	CA (8)	ESA (9)	
Optional 1	**Major 5**	Java Programming- II	10	10	10	40	--	--	50
	Major 6	Java Programming- II (practical)	--	--	--	--	20	30	50
	Major 7	Software Engineering	10	10	10	40	--	--	50
	Major 8	Software Engineering (Practical)	--	--	--	--	20	30	50
Optional 2	**Minor 3**	Mathematical Foundation for Computer Science	10	10	10	40	--	--	50
	Minor 4	Mathematical Foundation (practical)	--	--	--	--	20	30	50
Generic Elective (from other Faculty)	GE 4	Cyber Security-II	10	10	10	40	--	--	50
Skill Based Course (related to Major)	VSC 4	Networking & LAN Maintenance	--	--	--	--	20	30	50
Ability Enhancement Course (AEC) (Basket 4) Value Education Courses (VEC) / Indian Knowledge System (IKS)	**AECENG 4**	L1- Compulsory English	10	10	10	40	--	--	50
	ACEMIL 4	Marathi/ Hindi	10	10	10	40	--	--	50
	EVS	EVS	10	10	10	40	--	--	50

Guidelines for Course Assessment:

A. Continuous Assessment (CA) (20% of the Maximum Marks):

This will form 20% of the Maximum Marks and will be carried out throughout the semester. It may be done by conducting **Two Tests** (Test I on 40% curriculum) and **Test II** (remaining 40% syllabus). Average of the marks scored by a student in these two tests of the theory paper will make his **CA** score (col 6).

B. End Semester Assessment (80% of the Maximum Marks):

(For illustration we have considered a paper of 02 credits, 50 marks and need to be modified depending upon credits of an individual paper)

1. **ESA Question paper will consists of 6 questions, each of 10 marks.**
2. **Students are required to solve a total of 4 Questions.**
3. **Question No.1 will be compulsory and shall be based on entire syllabus.**
4. Students need to solve **ANY THREE** of the remaining Five Questions (Q.2 to Q.6) and shall be based on entire syllabus.

C. Assessment of Co-Curricular courses (CC):

a. Continuous Assessment (CA) of the CC course shall be done by the respective course coordinator depending on the regularity, performance of a student and his participation in the international, national, state, university, college level events or camps, wherever applicable.

b. End Semester Assessment (ESA) shall be done on the basis of the write-up and presentation by the student on the activities that he has carried out throughout the semester.

c. Students have freedom to take more than one CC courses, however, score of the best performing CES shall be considered for final assessment.

D. Syllabi, Teaching Scheme and Examination Scheme for the courses in Column 7 and Column 8 (AEC, VEC, IKS, CI, EVS, CCs, etc.) shall be common for all the students from different faculties.

Note: Number of lectures required to cover syllabus of a course depends on the number of credits assigned to a particular course. One credit of theory corresponds to 15 Hours lecturing and for practical course one credit corresponds to 30 Hours. For example, for a course of two credits 30 lectures of one hour duration are assigned, while that for a three credit course 45lectures.

%%%%%