# Symbiosis Institute of Geoinformatics, Pune
## Master of Science (Data Science & Spatial Analytics) - Dual Degree Programme Structure 2024-26

| 1. | **OBJECTIVE** | To create a professional human resource in the field of Data Science and analytics, spatial computing, artificial intelligence, and machine learning with the complexities of space science, offering students a comprehensive understanding of cutting-edge technologies and their applications in data science, space science, and related industry equipped with IT and information management skills to cater to the global industry requirements. | | |
|---|---|---|---|---|
| 2. | **DURATION (IN MONTHS)** | 24 (Full Time) | | |
| 3. | **INTAKE** | 10 | | |
| 4. | **RESERVATION** | **I. Within the sanctioned intake** | **a) SC (In Percentage)** | **b) ST (In Percentage)** | **c) Differently abled (In Percentage)** |
| | | | 15 | 7.5 | 3 |
| | | **II. Over and above the sanctioned intake** | **a) Kashmiri Migrants (In Seats)** | **b) International Students (In Percentage)** | |
| | | | 2 | 20 | |
| 5. | **ELIGIBILITY** | Graduate in Engineering, IT, Science, Computer Science, Computer Application of any recognized university/ Institution of National Importance with a minimum of 50% marks or equivalent grade (45% Marks or equivalent grade for Scheduled Caste /Scheduled Tribes). | | |
| 6. | **SELECTION PROCEDURE** | Personal Interaction and Writing Ability Test | | |
| 7. | **MEDIUM OF INSTRUCTION** | English | | |
| 8. | **PROGRAMME PATTERN** | Semester | | |
| 9. | **COURSE & SPECIALISATION** | As per Annexure A | | |
| 10. | **FEE** | | **Academic Fee p.a** | **Institute Deposit** | **Total** |
| | **1st Year** | | | | |
| | **Indian Students (Amount in INR)** | | 429000 | 20000 | 449000 |
| | **International Students** | **NRI/ PIO/ OCI Category (Amount in US$)** | 5450 | 275 | 5725 |
| | | | | | |
| | **2nd Year** | | | | |
| | **To be paid to the RUDN University, Russia based on their norms.** | | | | |
| 11. | **ASSESSMENT** | The courses will have 60% Continuous Assessment and 40% Term End [University] examination however, some courses (not more than 30% of the total | | |

| | | |
|---|---|---|
| | | programme credits) may have 100% Continuous Assessment. |
| 12. | **STANDARD OF PASSING** | The assessment of the student for each examination is done, based on relative performance. Maximum Grade Point (GP) is 10 corresponding to O (outstanding). For all courses, a student is required to pass both internal and external examination separately with a minimum Grade Point of 4 corresponding to Grade P. Students securing less than 40% absolute marks in each head of passing will be declared FAIL. The University awards a degree to the student who has achieved a minimum CGPA of 4 out of maximum of 10 CGPA for the programme. |
| 13. | **AWARD OF DEGREE** | Master of Science (Data Science & Spatial Analytics) will be awarded: By taking into consideration the performance of the first and second-semester examination at SIU after obtaining minimum CGPA of 4 out of a maximum of 10 CGPA. And after successfully completing the Master's Diploma in AI ML and Space Science programme at RUDN University, Russia. |
| 14. | **CLASSIFICATION OF CREDITS** | |

| Semester | Generic Core | Generic Elective | Specialisation Core | Specialisation Elective | Open Elective | Mandatory Non-Credit Course/s | Non-Letter Grade Audit Course/s | Total |
|---|---|---|---|---|---|---|---|---|
| **Common** | | | | | | | | |
| 1 | 23 | 0 | 0 | 0 | 0 | 1 | As per the student's choice | 23 |
| 2 | 25 | 0 | 0 | 0 | 0 | 1 | | 25 |
| 3 | Courses delivered as per the syllabus and structure of the Master's Diploma in AI ML and Space Science programme at RUDN University, Russia. Please refer to the annexure for course and credit mapping. (Annexure B) | | | | | | | |
| 4 | | | | | | | | |

This Programme Structure is aligned with the norms laid down by the University and is approved by the Academic Council and Board of Management.
Hereafter changes (if any) which conform to the policy on "Curriculum Development and Review" would be permissible, subject to revision of the Programme Structure, following the specified processes.

Director - Academics

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# Symbiosis Institute of Geoinformatics, Pune
## Master of Science (Data Science & Spatial Analytics) - Dual Degree Programme Structure 2024-26

## Annexure A

| Catalog Course Code | Course Code | Course Title | Specialisation | Credit | Continuous Assessment | Term End Examination | Total Marks |
|---|---|---|---|---|---|---|---|
| | | | **Semester : 1** | | | | |
| | | | **Generic Core Courses** | | | | |
| TE7444 | 0702440101 | Mathematics for Spatial Sciences | | 4 | 120 | 80 | 200 |
| TE7689 | 0702440102 | Statistics and Probability | | 3 | 150 | 0 | 150 |
| TE7442 | 0702440103 | Introduction to Geospatial Technology | | 3 | 90 | 60 | 150 |
| T3580 | 0702440104 | Relational Database Management System | | 3 | 90 | 60 | 150 |
| TE7469 | 0702440105 | Principles and Practices of Data Protection | | 3 | 90 | 60 | 150 |
| TE7931 | 0702440106 | Python for Data Science | | 3 | 90 | 60 | 150 |
| T2239 | 0702440107 | Business Communication | | 2 | 100 | 0 | 100 |
| TE7934 | 0702440108 | Research Methodology in Computational Sciences | | 2 | 60 | 40 | 100 |
| TH4788 | 0702440109 | Health and Wellness Module I | | 0 | 0 | 0 | Mandatory Non-Credit Course |
| | | | **Total** | 23 | 790 | 360 | 1150 |
| | | | **Semester : 2** | | | | |
| | | | **Generic Core Courses** | | | | |
| T3447 | 0702440201 | Machine learning | | 3 | 150 | 0 | 150 |
| TEE7023 | 0702440202 | Inferential Statistics | | 2 | 100 | 0 | 100 |
| TE7470 | 0702440203 | Data Driven Governance | | 2 | 60 | 40 | 100 |
| T7049 | 0702440204 | Spatial Data Base Management | | 2 | 60 | 40 | 100 |
| F0002 | 0702440205 | Flexi-Credit Course | | 2 | 100 | 0 | 100 |
| T3309 | 0702440206 | Big Data Analytics | | 3 | 90 | 60 | 150 |
| TE7930 | 0702440207 | Programming for computational sciences | | 3 | 90 | 60 | 150 |
| T3490 | 0702440208 | Applied Data Analytics with Python | | 3 | 90 | 60 | 150 |
| T3560 | 0702440209 | Computer Vision | | 3 | 90 | 60 | 150 |
| F0002 | 0702440210 | Flexi-Credit Course | | 2 | 100 | 0 | 100 |
| TH4789 | 0702440211 | Health and Wellness Module II | | 0 | 0 | 0 | Mandatory Non-Credit Course |
| | | | **Total** | 25 | 930 | 320 | 1250 |

**Semester 3 and Semester 4**
Courses delivered as per the syllabus and structure of Master's Diploma in AI ML and Space Science from the RUDN University Russia. Students will take courses to fulfill the credit requirements of?SIU?programme.

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## Annexure A

| Catalog Course Code | Course Code | Course Title | Specialisation | Credit | Continuous Assessment | Term End Examination | Total Marks |
|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |

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## Programme Structure 2024-26

| Semester | Continuous Assessment | Term End Examination | Total Credits | Total Marks |
|---|---|---|---|---|
| | | | | |
| Semester 1 | 5 | 18 | 23 | 1150 |
| Semester 2 | 9 | 16 | 25 | 1250 |
| Semester 3 | Courses delivered as per the syllabus and structure of the Master's Diploma in AI ML and Space Science programme at RUDN University, Russia. Please refer to the annexure for course and credit mapping (Annexure B). | | | |
| Semester 4 | | | | |

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## Annexure B
## Course Mapping Sheet

| Sr. No. | Course Mapping Semester | Course Title | Course Credits | RUDN University Course Title | RUDN Credits for the course |
|---|---|---|---|---|---|
| 1 | 3 | Deep Learning | 3 | Artificial Neural Network(Deep Learning) | 3 |
| 2 | 3 | Block Chain Technology | 3 | Technological Hazards and Cyber Security System | 3 |
| 3 | 3 | Spatial Modeling | 2 | Geoinformatics Systems and Applications | 3 |
| 4 | 3 | Artificial Intelligence | 3 | Artificial Neural Networks (Reinforcement Learning) | 3 |
| 5 | 3 | Summer Project | 4 | Research Work | 6 |
| 6 | 3 | Flexi-Credit Course | 2 | History and Methodology of Science | 2 |
| 7 | 3 | Elective Course | 3 | Cross Cultural Training | 2 |
| 8 | 4 | Industry Project | 12 | Undergraduate Training | 15 |
| | **Total Credits** | | 32 | | 37 |