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INDUSTRY-READY DATA SCIENTISTS EMERGE WHEN RIGOROUS CODING CULTURE BECOMES NON-NEGOTIABLE

SP Jain School of Global Management's Bachelor of Data Science program stands out for its rigor, global industry alignment, and unwavering emphasis on coding excellence. In his conversation with Education Post's **Prabhav Anand, Dr. Abhijit Dasgupta** explains how the curriculum is continuously benchmarked against Big Tech standards, refreshed each semester, and supported by workshops, impactful capstone projects, and international internships. From strong foundations in algorithms to advanced competencies in GenAI, MLOps, and full-stack development, the program prepares students for real-world challenges while instilling future-ready discipline and industry culture.

Your Bachelor of Data Science programme places heavy emphasis on industry-readiness — how do you decide which tech (libraries, languages, frameworks) and topics (ML, deep learning, MLOps, large language models, etc.) are mandatory in the curriculum versus elective? How often do you refresh that list, and what role do industry partners play in those decisions?

SP Jain Global's top-ranked Bachelor of Data Science program is aligned with industry requirements, and is probably one of the most difficult courses in the pure Computer Science / Data Science area, which is taught by IITians with Ivy League MS/PhD qualifications – our industry connect helps to redefine the course curriculum, and within the curriculum, there is continuous updating that happens every semester. The course is generally overhauled every 3–4 years to keep it super competitive internationally. The course design is fixed, and there is no option to take an easy course in between. The electives come in terms of workshops (such as Quantum Computing, Advanced Data Structures & Algorithms, etc.) and Capstone Projects. The benchmarking is typically with tech stacks in Big Tech companies, and throughout the course, the major emphasis is on inculcating coding skills.

SP Jain's BDS has reported strong placement outcomes in recent years. Can you walk us through the department's placement strategy — from preparing students (projects, mock interviews, case challenges) to employer engagement — and explain how you measure whether placements reflect genuine skill alignment rather than short-term demand?

Very early in the program, right from the 1st semester, students are encouraged to compete in hackathons and coding competitions. Apart from this, students are organized in groups and research projects are assigned. These research projects very often get culminated in paper publications in top journals such as IEEE, Springer, Elsevier, and Nature, etc.

After their first year, students are placed as interns in the US, the UK, the EU, India, and Australia, etc., at universities and in corporate organizations. Again, after the end of the 2nd year, students are assigned internships in companies, and most often these internships convert into return offers.

As on date, the skill requirements for Cloud Computing, Full Stack Development, Machine Learning, CI-CD-CT, DevOps/ MLOps, apart from high-end skills in GenAI, Computer Vision, and AgenticAI, etc.: all of these skills are covered in the course; and students graduate with medium to high competencies in Python, building & managing data pipelines, PyTorch (ML libraries included), SAS, AWS/Azure, OpenCV, LangChain, Java Enterprise Edition, developing APIs in Flask, Spark, NoSQL, and Advanced SQL – students are typically mentored to focus on their top 3 skills while imbibing basic to average competencies in other relevant skills.

Many students entering data science come from varied backgrounds (commerce, arts, pure science) and often struggle with the math/ statistics/programming ramp-up. What specific bridging strategies, remedial modules or pedagogic changes has your department introduced to level-up students quickly without diluting course rigor?

Education is all about students and never about universities or the faculties therein; as long as a student has enough motivation to succeed, they will do well. For students who come with an inadequate background in mathematics, a month-long bootcamp on mathematics and computer programming is undertaken before the start of the semester to ensure homogeneity in basic preparedness.

Q Applied projects and internships are touted as the programme's strengths. How do you ensure internships expose students to real, messy data problems (not curated toy datasets), and what safeguards do you have to prevent students being used for low-value work? Can you give an example of a recent capstone or industry project that had measurable impact?

Skills and competencies are matched with the internship project opportunities before assignments are made. Internships are not real jobs, but they provide a student with the opportunity to apply the skills learned in school to a real industry/research situation and solve problems. Most of the time, organizations align interns to pilot projects before committing major investments in those projects. In other cases, interns are tasked with really challenging work, such as developing a perception system for a UAV, building a RAG pipeline, developing a BI dashboard for executive consumption, or building a product for a cybersecurity company where ECG data is used for encryption – well, this project has now been granted a patent. Another interesting project, which is now being implemented, is in the area of carbon credit cards. There are many such examples where student projects have contributed major value to the organization.

Q With increasing attention on AI ethics, data privacy and regulatory compliance, how is the BDS integrating responsible AI and legal/ethical training into technical modules? Are assessments designed to test students' ability to reason about bias, fairness and data governance — and if so, how?

Students are trained on Ethical AI, AI governance, and privacy to an extent suitable for an undergrad CS/DS program, e.g., GDPR, PII, and the Indian IT Act, etc. These are not part of the course, but are conducted as workshops, and quizzes/ MCQ tests are organized to gauge learning outcomes.

Student mental health, academic burnout and the competitive "placement race" are growing concerns in technical undergrad programmes. From orientation through final year, what counselling, workload-management or assessment policies has the department put in place to support students' wellbeing while maintaining high standards?

Tech is intellectually draining, and we actively discourage students who may not be able to keep up with the demands of the tech industry. For instance, in real life, teams could be distributed in different geographies (like San Francisco, London, Bangalore, Sydney, etc.), and therein, one is expected to show up and contribute to the standup calls. Someone who is not motivated enough to deal with 24x7 work in high-stress environments won't be suitable for a career in tech.

We counsel students and get them to face realities early in the course, so that the simulations in the classroom become close to the actual industry scenario. So far as mental health is concerned, we have psychological counselling, which is very similar to the ones in a corporate setup.

Employers increasingly ask for experience with productionizing models (MLOps, deployment, monitoring). How are you balancing teaching foundational theory with hands-on training in software-engineering practices necessary to take models to production — and how do you assess "deployability" in student projects?

The course is 30% theoretical and 70% practically oriented. Even courses like Algebra and Calculus are taught from a computer science point of view, and students get to do projects that solve a mathematical problem using computer code.

Industry, specifically big-tech, requires seven days to develop and deploy a solution into production. This is part of the culture building in the course.

Looking ahead 3–5 years, what changes do you foresee for undergraduate data science education (e.g., more specialization, micro-credentials, industry co-designed degrees)? What is SP Jain's strategy to keep the BDS future-proof — especially against rapid shifts like foundation models, automated ML and the globalisation of hiring — and what metrics will you use to judge success?

The primary qualification of any CS/DS graduate is the ability to code. The rest of the skillsets keep changing over time as newer dimensions and technologies are mainstreamed. The only way to future-proof any CS/DS program is to emphasise these core skills, and that's why we have a major thrust on building this skill. Very early, students are taught Object-Oriented Programming, Data Structures & Algorithms, Mathematics for Competitive Coding, etc., to seriously instill the culture of future readiness.

Interestingly, our students are actively discouraged from using AI tools in the program, since despite the perception going around in the market that AI is going to take away all software engineering jobs, that's not going to happen any time soon. Software is alive for a minimum of 10 years, often 30 years (for enterprise-class products), and development is only about 5–10% of this horizon where AI is going to disrupt or is disrupting. An AI engineer writes AI algorithms for business users – s/he does not use AI to build those.