■ Curriculum vs Job Market Alignment Report

■ Executive Summary

This curriculum demonstrates strengths in practical, market-aligned areas like Data Science (98%), Mobile-based Application Development (89%), Business Intelligence (87%), and Cloud-based Application Development (77%). However, foundational theoretical areas are significantly weaker, notably Discrete Structures (20%), Probability and Statistics (12%), and Analysis and Design of Algorithms (18%). This gap hinders students' ability to develop advanced algorithms and rigorously analyze data, limiting their potential in fields like AI and Machine Learning (both scoring below 60%). The curriculum lacks consistent focus on soft skills, project management, and specific industry-standard tools. For example, despite covering web technologies, Agile development methodologies and collaboration platforms like Jira/Trello are absent. Improvement recommendations include: 1. Strengthening foundational math and algorithm courses. 2. Integrating project-based learning incorporating soft skills and modern tools. 3. Aligning AI/ML courses with industry demands by incorporating practical tools and frameworks (e.g., TensorFlow, PyTorch). 4. Implementing specialized tracks to cater to specific career paths (e.g., Data Science, Cybersecurity).

Course Code	Course Title	Skills Taught	Skills in Market	Score	Coverage	Avg. Similarity
CompF	Computing Fundamentals	analyzing computer systems applying computing principles evaluating ict hardware innovations exhibiting ict software innovations implementing computer security measures mitigating computer viruses researching computing industry trends diagnosing computer security threats evaluating hardware innovations implementing ict software solutions analyzing computer security exhibiting ict innovations identifying computer viruses understanding computer architecture describing virus behavior evaluating software applications explaining computer security identifying hardware components presenting ict innovations	analyzing computer systems applying software development principles implementing security measures analyzing security threats implementing software analyzing security threats developing software applications	34	0.37	0.93

Course Code	Course Title	Skills Taught	Skills in Market	Score	Coverage	Avg. Similarity
Prog1	Programming Essentials	analyzing requirements debugging programs designing programs developing prototypes implementing programs programming in c testing programs using cisco programming standards applying cisco programming standards developing project prototypes using fundamental programming constructs	analyzing requirements debugging developing prototypes programming in c testing programs using cisco developing prototypes using fundamental models	70	0.73	0.97
LITEP	Living in IT Era (for Computing Profession)	analyzing problems communicating technical ideas visually developing structured solutions using flowcharts writing pseudocode communicating ideas visually	problem analysis communicating technical concepts developing data solutions using flowcharts writing code	76	0.83	0.92

Course Code	Course Title	Skills Taught	Skills in Market	Score	Coverage	Avg. Similarity
2D	2D Animation	animating 2d game objects applying animation principles creating 2d game assets designing 2d animations integrating 2d assets into game engines rigging 2d characters using 2d animation software animating sprites creating game assets optimizing game art animating 2d characters creating game environments designing game assets implementing game object behaviors using animation software creating movement arcs designing game environments designing game objects implementing animation physics preparing 2d assets for game integration	integrating 2d3d assets using 3d modeling software animating optimizing game performance animating designing ui assets implementing game mechanics designing games designing games	41	0.45	0.91

Course Code	Course Title	Skills Taught	Skills in Market	Score	Coverage	Avg. Similarity
Prog2	Advanced Programming	analyzing requirements applying data structures implementing algorithms testing software using professional development tools using standard libraries writing code in a generalpurpose language applying objectoriented principles using data structures writing code in c++javapython leveraging standard libraries applying programming paradigms debugging programs writing clean code	analyzing requirements using data structures implementing machine learning algorithms testing software using jetpack libraries writing code applying objectoriented principles using data structures applying functional programming debugging writing clean code	75	0.79	0.95
Python	Introduction to Python	automating tasks with python controlling program flow defining functions defining variables developing web applications with python handling errors in python manipulating data with python using data types using python defining and calling functions	automating with python writing functions developing web applications handling errors using data structures using python	56	0.60	0.94

Course Code	Course Title	Skills Taught	Skills in Market	Score	Coverage	Avg. Similarity
DStruc	Data Structures and Algorithms	analyzing algorithm efficiency applying sets and hashing choosing optimal data structures implementing stacks and queues performing sorting and searching algorithms using trees and graphs applying tree algorithms implementing data structures implementing searching algorithms implementing sorting algorithms performing set operations using hashing techniques using stacks and queues working with graphs applying hashing techniques	applying machine learning algorithms using data structures implementing machine learning algorithms implementing machine learning algorithms using machine learning techniques	29	0.33	0.90
SofEng	Software Engineering	designing software gathering requirements modeling with uml performing quality assurance programming applications testing software writing documentation	designing software gathering requirements performing quality assurance testing software writing documentation	71	0.71	1.00

Course Code	Course Title	Skills Taught	Skills in Market	Score	Coverage	Avg. Similarity
Infom2	Information Management 2	implementing database security managing database concurrency normalizing databases tuning database performance using nosql databases designing database systems concurrency control database management systems database normalization database security domainspecific database development nosql databases performance tuning	implementing data security normalizing data tuning database performance using nosql databases designing databases database management normalizing data using nosql databases performance tuning	66	0.69	0.96
CloudApp	Cloud-based Application Development	deploying cloud applications designing scalable systems developing apis implementing security best practices leveraging cloud services practicing devops principles using cloud platforms building scalable applications implementing cloud security using cloud apis applying devops principles building apis designing cloud applications managing cloud scalability using cloud services	deploying applications designing scalable software developing apis implementing security best practices using cloud services using cloud platforms building scalable applications implementing azure security using cloud message apis building apis designing cloud applications using cloud services	77	0.80	0.97

Course Code	Course Title	Skills Taught	Skills in Market	Score	Coverage	Avg. Similarity
DatMine	Data Mining and Predictive Analytics using R	building predictive models interpreting analytics performing classification performing cluster analysis performing regression using r interpreting analytics output performing classification analysis performing clustering analysis performing regression analysis	building predictive models interpreting data performing data analysis performing regression testing using r interpreting data performing data analysis performing data analysis performing regression testing	83	0.90	0.93
OS	Operating System	analyzing os behavior handling memory implementing security measures managing filesystems managing processes managing threads simulating os behavior synchronizing resources analyzing file systems analyzing multiuser environments simulating os behaviors simulating multiuser environments simulating operating systems synchronizing processes	implementing security measures managing files analyzing systems managing operating systems	26	0.29	0.93

Course Code	Course Title	Skills Taught	Skills in Market	Score	Coverage	Avg. Similarity
WebDev	Web Development Technologies	applying version control building web applications delivering presentations implementing frontend technologies integrating analytics managing backend systems using modern web frameworks writing documentation creating presentations integrating google analytics using css using git using html using javascript using node.js using react developing backend systems developing frontend interfaces integrating analytics tools managing versions with git presenting projects performing rest api interactions writing css writing html	using version control building web applications integrating data managing backend communication using css frameworks writing documentation integrating google sheets using css using git using html using javascript using node.js using react developing backend systems developing frontend interfaces writing css writing html	68	0.71	0.97
SAD	Systems Analysis and Design	analyzing information systems applying system development life cycle designing information systems developing information systems prototyping software using case tools using oom tools prototyping systems	analyzing computer systems software development life cycle designing software systems developing information systems prototyping using ocr tools prototyping	81	0.88	0.93

Course Code	Course Title	Skills Taught	Skills in Market	Score	Coverage	Avg. Similarity
GameMath	Applied Math for Games	applying matrices calculating probability coding mathematical equations coding mathematical functions implementing vector algebra modeling game behavior performing statistical analysis simulating game mechanics using analytical geometry applying statistical methods applying vector algebra implementing probability models performing analytical geometry simulating game scenarios using mathematical equations in game development using mathematical functions in game development using matrices	coding coding performing statistical analysis implementing game mechanics applying statistical methods implementing models	33	0.35	0.95
MATH3DS	Discrete Structures	applying mathematical logic calculating discrete probabilities constructing proofs designing finite state machines implementing recursion manipulating sets and functions using mathematical induction applying mathematical induction and recursion applying induction and recursion	implementing manipulating dom	20	0.22	0.90

Course Code	Course Title	Skills Taught	Skills in Market	Score	Coverage	Avg. Similarity
ProElec1	Business Intelligence and Visualization	business intelligence dashboard development data analysis data collection data mining data visualization power bi report generation tableau collecting data creating dashboards creating reports mining data performing data analysis using power bi using tableau visualizing data generating reports	business intelligence dashboard development data analysis data mining data visualization power bi report generation tableau developing dashboards writing reports data mining performing data analysis using power bi using tableau visualizing data generating reports	87	0.89	0.99
HCI	Usability, HCI and User Interaction Design	applying hci principles applying usercentered design practices conducting usability testing creating guis evaluating user experience	applying ux principles conducting usability testing creating ui components	56	0.60	0.94
InfoAs	Information Assurance and Security	analyzing system vulnerabilities applying cryptography implementing access control managing risks securing web systems managing risk handling information assets ethically handling information assets legally managing security risks	managing risks managing risks managing risks	32	0.33	0.98

Course Code	Course Title	Skills Taught	Skills in Market	Score	Coverage	Avg. Similarity
ProElec3	Machine Learning	building neural networks deploying machine learning models developing machine learning models evaluating machine learning models implementing support vector machines performing clustering analysis using ensemble models clustering ensemble models machine learning model deployment model evaluation neural networks support vector machines	deploying machine learning models developing machine learning models evaluating models performing data analysis machine learning deploying models evaluating models using neural networks	54	0.57	0.96
Techno	Technopreneurship	analyzing business viability conducting product validation developing business plans pitching business models analyzing market needs building financial models pitching business ideas validating productmarket fit creating financial projections developing business models performing market research using presentation software	analyzing business requirements developing business plans analyzing project needs validating data developing business plans conducting market research	45	0.50	0.90

Course Code	Course Title	Skills Taught	Skills in Market	Score	Coverage	Avg. Similarity
3D	3D Animation	creating 3d assets developing virtual environments rigging characters scripting animation sequences using 3d animation software using game engines animating characters developing virtual worlds lighting virtual environments texturing models animating sequences building virtual worlds developing gameready animations scripting animations implementing game mechanics	integrating 3d assets working with virtual environments scripting using 3d modeling software using game engines animating working with virtual environments animating scripting implementing game mechanics	62	0.67	0.94
Infom1	Information Management 1	creating er diagrams designing databases designing schemas implementing relational databases modeling data writing sql	creating process flow diagrams designing databases designing schemas using relational databases modeling data writing sql	96	1.00	0.97

Course Code	Course Title	Skills Taught	Skills in Market	Score	Coverage	Avg. Similarity
ADA	Analysis and Design of Algorithms	analyzing algorithm performance analyzing algorithm space complexity analyzing algorithm time complexity choosing appropriate algorithms implementing divide and conquer algorithms implementing graph algorithms performing search and sort algorithms applying graph algorithms performing searches and sorts selecting appropriate algorithms	implementing machine learning algorithms applying machine learning algorithms	18	0.20	0.91
MATH3C	Analytical Geometry and Calculus	analyzing functions applying analytical geometry applying calculus performing integration solving differential equations using mathematical models calculating limits computing derivatives computing integrals modeling with mathematics solving equations modeling with equations	applying oop performing data integration calculating physics modeling data modeling data	36	0.42	0.88

Course Code	Course Title	Skills Taught	Skills in Market	Score	Coverage	Avg. Similarity
Math4pS	Probability and Statistics	applying probability theory calculating descriptive statistics conducting hypothesis tests performing regression analysis working with probability distributions implementing regression analysis performing hypothesis testing	performing regression testing	12	0.14	0.91
MobApp	Mobile-based Application Development	designing user experiences designing user interfaces developing mobile applications integrating data testing mobile applications using android apis using ios apis designing uiux performing mobile testing using device apis using platformspecific apis developing android apps developing ios apps testing mobile apps	personalizing user experiences designing user interfaces developing mobile applications integrating data testing ios applications using android apis ios apis uiux design performing software testing using apis using apis developing android apps developing ios apps	89	0.93	0.96

Course Code	Course Title	Skills Taught	Skills in Market	Score	Coverage	Avg. Similarity
ProElec4	Artificial Intelligence	applying ai algorithms building decisionmaking models designing ai systems developing decision support systems implementing search algorithms representing knowledge using analytics tools applying ai in analytics using ai in analytics using ai in decision support	applying machine learning algorithms designing ai systems developing information systems implementing machine learning algorithms using predictive analytics	45	0.50	0.92
DatSci	Data Science	big data data analysis data mining data visualization machine learning python applying machine learning managing big data performing data mining using python visualizing data mining data	big data data analysis data mining data visualization machine learning python applying machine learning managing big data performing data discovery using python visualizing data data mining	98	1.00	0.99

Course Code	Course Title	Skills Taught	Skills in Market	Score	Coverage	Avg. Similarity
OOPro	Object-Oriented Programming	applying composition applying inheritance defining classes encapsulating data implementing polymorphism using abstraction using java applying objectoriented programming principles applying polymorphism developing systems using abstraction developing systems using composition implementing data encapsulation using inheritance abstraction composition data encapsulation inheritance java objectoriented programming polymorphism	applying oop encrypting data implementing using java applying objectoriented programming principles applying oop implementing data storage java objectoriented programming	41	0.45	0.93
CompOrg	Computer Organization with Microcontroller Programming	interfacing microcontrollers interfacing with electronic components managing memory programming in assembly language programming peripheral devices using inputoutput systems programming microcontrollers working with peripheral devices	memory management programming in assembly using build systems working with linux	44	0.50	0.90

Course Code	Course Title	Skills Taught	Skills in Market	Score	Coverage	Avg. Similarity
Automata	Automata Theory and Formal Languages	analyzing computational theory applying computation and logic to language processing applying formal grammars constructing finite automata designing compilers implementing pushdown automata manipulating contextfree grammars using regular expressions designing finite automata processing languages applying regular expressions using formal grammars working with contextfree grammars	applying natural language processing implementing test automation manipulating dom data processing	26	0.31	0.86
CSSAC	CS Trends, Seminars and Certifications	conducting case studies developing prototypes presenting technical concepts pursuing microcertifications researching emerging technologies presenting technical information developing case studies prototyping software	developing prototypes communicating technical concepts evaluating emerging technologies presenting technical information prototyping	59	0.62	0.96

Course Code	Course Title	Skills Taught	Skills in Market	Score	Coverage	Avg. Similarity
NETW1	CCNA: Introduction to Networks	applying subnetting configuring routers configuring switches implementing network security basics implementing tcpip managing vlans troubleshooting networks managing network security using cisco devices applying network security concepts implementing network security using cisco ios	applying tdd configuring cisco routers network security implementation managing vmware troubleshooting networks using cisco applying web security concepts network security implementation using cisco	70	0.75	0.94

Course Code	Course Title	Skills Taught	Skills in Market	Score	Coverage	Avg. Similarity
ProLan	Programming Languages	analyzing programming language semantics analyzing programming language syntax developing applications implementing functional programming paradigms implementing imperative programming paradigms implementing logic programming paradigms implementing objectoriented programming paradigms managing memory models using control structures developing applications using various programming languages evaluating memory models managing scoping within programming languages managing scoping in programming languages understanding memory models	developing applications applying functional programming principles applying objectoriented programming principles using data structures developing software applications evaluating models	39	0.43	0.92

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Note on the formula: *score = int(avg_similarity * coverage * 100)*