

■ Curriculum vs Job Market Alignment Report

■ Executive Summary

This analysis reveals significant discrepancies in course alignment. Data Science, Web Development Technologies, Information Management 2, and Business Intelligence and Visualization demonstrate strong alignment (81-100%) suggesting effective curriculum-job market matching. Conversely, Discrete Structures, Analytical Geometry and Calculus, 3D Animation, and Computer Organization with Microcontroller Programming exhibit extremely weak alignment (0-12%), indicating a disconnect between instruction and practical application. Several key skills appear absent or underemphasized. While programming concepts are taught, practical application in areas like cybersecurity, cloud computing, and specific software development methodologies (e.g., Agile) are lacking. Soft skills like communication and project management are also notably absent. Curriculum improvement should focus on bridging the gap between theoretical concepts and practical skills. Revamping low-performing courses with project-based learning incorporating real-world applications is crucial. Integrating cybersecurity, cloud computing, and agile methodologies into relevant courses, along with dedicated soft skills training, would better prepare students for the current job market.

Course Code	Course Title	Skills Taught	Skills in Market	Score	Coverage	Avg. Similarity
WebDev	Web Development Technologies	creating presentations integrating google analytics using css using git using html using javascript using node.js using react writing documentation	presenting using google analytics using css using git using html using javascript using node.js using react writing documentation	94	1.00	0.94

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 object-oriented programming paradigms managing memory models using control structures	developing applications applying functional programming principles implementing object-oriented programming	37	0.44	0.85
ProElec4	Artificial Intelligence	applying ai in analytics building decision-making models designing ai systems implementing search algorithms representing knowledge	developing agentic ai systems algorithms	30	0.40	0.75
ProElec3	Machine Learning	clustering ensemble models machine learning model deployment model evaluation neural networks support vector machines	machine learning deploying models	27	0.29	0.95

OS	Operating System	analyzing file systems analyzing multi-user environments handling memory implementing security measures managing processes managing threads simulating os behaviors synchronizing resources	analyzing computer systems implementing security measures designing business processes threading	38	0.50	0.77
NETW1	CCNA: Introduction to Networks	applying subnetting configuring routers configuring switches implementing tcp/ip managing network security troubleshooting networks using cisco devices	cisco router configuration configuring managing computer networks	31	0.43	0.73
MobApp	Mobile-based Application Development	designing ui/ux developing mobile applications integrating data performing mobile testing using device apis using platform-specific apis	performing ui design developing mobile applications data integration using android apis using apis	69	0.83	0.83
InfoAs	Information Assurance and Security	analyzing system vulnerabilities applying cryptography implementing access control managing risk securing web systems	mitigating vulnerabilities implementing authorization risk management implementing web security	60	0.80	0.76
DatMine	Data Mining and Predictive Analytics using R	building predictive models interpreting analytics output performing classification analysis performing clustering analysis performing regression analysis using r	developing predictive models interpreting data performing data analysis performing data analysis regression using r	81	1.00	0.82

CSSAC	CS Trends, Seminars and Certifications	conducting case studies developing prototypes presenting technical information pursuing micro-certifications researching emerging technologies	prototyping evaluating emerging technologies	30	0.40	0.76
Math4pS	Probability and Statistics	applying probability theory calculating descriptive statistics implementing regression analysis performing hypothesis testing working with probability distributions	regression performing unit testing	29	0.40	0.74
HCI	Usability, HCI and User Interaction Design	applying hci principles applying user-centered design practices conducting usability testing creating guis evaluating user experience	applying ui/ux principles conducting usability testing creating ui components applying user experience (ux) principles	62	0.80	0.78
CloudApp	Cloud-based Application Development	building scalable applications deploying cloud applications implementing cloud security practicing devops principles using cloud apis	designing scalable software deploying applications using cloud app security using devops tools using apis	77	1.00	0.78
Automata	Automata Theory and Formal Languages	analyzing computational theory applying formal grammars designing compilers designing finite automata implementing pushdown automata manipulating context-free grammars processing languages using regular expressions	analyzing computer systems data processing	16	0.25	0.67

MATH3C	Analytical Geometry and Calculus	analyzing functions applying calculus calculating limits performing integration solving differential equations using mathematical models	using integration tools	11	0.17	0.72
Techno	Technopreneurship	analyzing business viability conducting product validation developing business plans pitching business models	analyzing business requirements business plan development	40	0.50	0.81
ProElec1	Business Intelligence and Visualization	collecting data creating dashboards creating reports mining data performing data analysis using power bi using tableau visualizing data	developing dashboards developing reports data mining performing data analysis using power bi using tableau visualizing data	83	0.88	0.95
Infom2	Information Management 2	designing database systems implementing database security managing database concurrency normalizing databases tuning database performance using nosql databases	designing databases implementing web security database management normalizing data tuning database performance using nosql databases	85	1.00	0.85

ADA	Analysis and Design of Algorithms	analyzing algorithm performance analyzing algorithm space complexity analyzing algorithm time complexity applying graph algorithms choosing appropriate algorithms implementing divide and conquer algorithms performing searches and sorts	algorithms algorithms algorithms	33	0.43	0.79
MATH3DS	Discrete Structures	applying mathematical induction and recursion applying mathematical logic calculating discrete probabilities constructing proofs designing finite state machines manipulating sets and functions		0	0.00	0.00
SofEng	Software Engineering	designing software gathering requirements modeling with uml performing quality assurance programming applications testing software writing documentation	designing software defining requirements quality assurance testing designing applications testing software writing documentation	76	0.86	0.90

OOPro	Object-Oriented Programming	applying object-oriented programming principles applying polymorphism defining classes developing systems using abstraction developing systems using composition implementing data encapsulation using inheritance using java	applying object-oriented programming using java	24	0.25	0.97
Infom1	Information Management 1	creating er diagrams designing databases designing schemas implementing relational databases modeling data writing sql	designing databases designing schemas using relational databases modeling data writing sql	81	0.83	0.98
GameMath	Applied Math for Games	applying statistical methods applying vector algebra implementing probability models modeling game behavior performing analytical geometry simulating game scenarios using mathematical equations in game development using mathematical functions in game development using matrices	applying statistical methods implementing data models	19	0.22	0.87

DStruc	Data Structures and Algorithms	analyzing algorithm efficiency 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	using data structures algorithms algorithms	26	0.33	0.80
DatSci	Data Science	big data data analysis data mining data visualization machine learning python	big data data analysis data mining data visualization machine learning python	100	1.00	1.00
3D	3D Animation	animating characters creating 3d assets developing virtual worlds lighting virtual environments rigging characters scripting animation sequences texturing models using 3d animation software	working with animation	8	0.12	0.68
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	analyzing systems software development lifecycle developing information systems developing information systems prototyping	62	0.71	0.87

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	automating with python developing web applications using data structures using python	37	0.44	0.85
Prog2	Advanced Programming	analyzing requirements applying object-oriented principles implementing algorithms testing software using data structures using standard libraries writing code in c++/java/python	analyzing requirements applying object-oriented programming developing algorithms testing software using data structures using third-party libraries programming in java/python/c#	87	1.00	0.88
2D	2D Animation	animating sprites applying animation principles creating game assets designing 2d animations optimizing game art rigging 2d characters using 2d animation software	working with animation working with animation optimizing game performance working with animation	40	0.57	0.72
LITEP	Living in IT Era (for Computing Profession)	analyzing problems communicating technical ideas visually developing structured solutions using flowcharts writing pseudocode	problem-solving architecting solutions using flowcharts writing code	59	0.80	0.75

Prog1	Programming Essentials	analyzing requirements applying cisco programming standards debugging programs designing programs developing project prototypes implementing programs testing programs using fundamental programming constructs	analyzing requirements debugging designing software implementing software testing programs programming	65	0.75	0.87
CompF	Computing Fundamentals	analyzing computer systems applying computing principles diagnosing computer security threats evaluating hardware innovations implementing ict software solutions mitigating computer viruses researching computing industry trends	analyzing computer systems applying functional programming principles analyzing security threats implementing software	45	0.57	0.80
CompOrg	Computer Organization with Microcontroller Programming	interfacing microcontrollers interfacing with electronic components managing memory programming in assembly language programming peripheral devices using input/output systems	programming	12	0.17	0.73

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Note on the formula: $score = \text{int}(\text{avg_similarity} * \text{coverage} * 100)$