



IEM Salt Lake Campus, IEM Newtown Campus & IEM Jaipur Campus

Syllabus Outline

For

Bachelor of Computer Applications

Effective from Academic Year 2026-2027

DEPARTMENT OF COMPUTER APPLICATIONS

BCA 1st SEMESTER

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NPTEL Courses for BCA 1st Semester

Note: NPTEL course is mandatory from the 2nd semester onwards. However, students are encouraged to enroll in relevant NPTEL courses to enhance their knowledge and skills.

The list of available NPTEL courses can be accessed here:

https://docs.google.com/spreadsheets/d/e/2PACX1vT0VPb0_8Klf6b_vmnf2xeMF0eb79YX3rmIuZjuxxkGA7Kadg_WLLatyIM1c9QQ1PZQPZvSjL3FKhB/pubhtml?urp=gmail_link

BCA 1st Semester Phygital Learning Subjects

(At least one certification from each pool for the subjects is mandatory)

1. Introduction to C Programming -

- A. Coursera Course: <https://www.coursera.org/specializations/c-programming>
- B. LinkedIn Learning Course: https://www.linkedin.com/learning/complete-guide-to-c-programming-foundations?upsellOrderOrigin=default_guest_learning&trk=default_guest_learning
- C. Infosys Springboard Course: https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_01384323703937433634517_shared/overview

2. Digital Electronics –

- A. Coursera Course: <https://www.coursera.org/learn/digital-systems>
- B. LinkedIn Learning Course: <https://www.linkedin.com/learning/electronics-foundations-fundamentals>

3. Discrete Structure –

- A. LinkedIn Learning Course: <https://www.linkedin.com/learning/programming-foundations-discrete-mathematics?u=229219690>

4. Digital Marketing –

- A. Coursera Course: <https://www.coursera.org/specializations/digital-marketing>
- B. LinkedIn Learning Course: <https://www.linkedin.com/learning/digital-marketing-foundations-15054577/connecting-with-customers-online?u=229219690>

BCA 2nd SEMESTER

BCA 2026 Course structure										
SEMESTER 2										
SL NO	TYPES OF COURSE	SUB CODE	SUB NAME	L	T	P	S	TOTAL CONTACT HRS	CREDIT POINTS	
THEORY										
1	Computer Science & Application	BCACC201	Data Structures	3	1	0	0	4	4	
2	Computer Science & Application	BCACC202	Object oriented programming	3	1	0	0	4	4	
3	Computer Science & Application	BCACC203	Computer Architecture	3	1	0	0	4	4	
4	Multidisciplinary	BCAMD201	Mathematics for Computing	3	1	0	0	4	2	
5	Value Added Course	BCAGS201	General Studies & Current Affairs -II	2	0	0	0	2	2	
PRACTICAL										
6	Computer Science & Application	BCACC291	Data Structures lab with C	0	0	4	0	4	2	
7	Computer Science & Application	BCACC292	Object oriented programming lab with C++	0	0	4	0	4	2	
SESSIONAL										
8	Skill Enhancement	BCAGS281	Competitive Aptitude Training –II	0	0	0	2	2	2	
9	Ability Enhancement	BCAAE281	Principles of Management	0	0	0	2	2	2	
MOOCS/MAR/IFC										
10	Value Added Course	MOOCs	Massive Open Online Course	0	0	0	0	0	0	
11	Value Added Course	IFC	Industry and foreign certification	0	0	0	0	0	0	
12	Value Added Course	MAR	Mandatory Additional Requirements(MAR)	0	0	0	0	0	0	
								30	24	

NPTEL Courses for BCA 2nd Semester

(Any one certification is mandatory)

1. **Object Oriented Programming** - https://onlinecourses.nptel.ac.in/e-learning/preview/noc26_cs159
2. **Computer Architecture** - https://onlinecourses.nptel.ac.in/e-learning/preview/noc26_cs168

BCA 2nd Semester Phygital Learning Subjects

(At least one certification from each pool for the subjects is mandatory)

1. Data Structures:

- A. Coursera Course: <https://www.coursera.org/learn/data-structures>
- B. LinkedIn Learning Course: <https://www.linkedin.com/learning/programming-foundations-data-structures-22859292>

2. Object oriented programming:

- A. Coursera Course: <https://www.coursera.org/courses?query=c%2B%2B>
- B. LinkedIn Learning Course: <https://www.linkedin.com/learning/topics/c-plus-plus?u=229219690>

3. Computer Architecture:

- A. Coursera Course: <https://www.coursera.org/learn/comparch>
- B. LinkedIn Learning Course: <https://www.linkedin.com/learning/introduction-to-it-architecture/it-architecture-overview?u=229219690>

4. Mathematics for Computing:

- A. Coursera Course: <https://www.coursera.org/learn/machine-learning-probability-and-statistics>
- B. LinkedIn Learning Course: https://www.linkedin.com/learning/statistics-foundations-1-the-basics?trk=learning-topics_trending-courses_related-content-card&upsellOrderOrigin=default_guest_learning

BCA 3rd SEMESTER

[illegible]

NPTEL Courses for BCA 3rd Semester
(Any one certification is mandatory)

1. **Operating Systems** - https://onlinecourses.nptel.ac.in/e-learning/preview/noc26_cs123
2. **Design & Analysis of Algorithms** - https://onlinecourses.nptel.ac.in/e-learning/preview/noc26_cs110

BCA 3rd Semester Phygital Learning Subjects
(At least one certification from each pool for two subjects is mandatory)

1. Design & Analysis of Algorithms:

- A. Coursera Course: <https://www.coursera.org/learn/algorithmic-toolbox>
- B. LinkedIn Learning Course: <https://www.linkedin.com/learning/foundations-of-algorithmic-thinking-with-python/importance-of-algorithmic-thinking?u=229219690>

2. Operating Systems:

- A. Coursera Course: <https://www.coursera.org/specializations/codio-introduction-operating-systems>
- B. LinkedIn Learning Course: <https://www.linkedin.com/learning/iot-foundations-operating-systems-fundamentals/welcome?u=229219690>
- C. Infosys Springboard Course: https://infyspringboard.onwingspan.com/web/en/login?ref=%2Fapp%2Ftoc%2Flex_auth_0135015677134110729950%2Foverview

3. Artificial Intelligence using Python:

- A. LinkedIn Learning Course: <https://www.coursera.org/specializations/ai-foundations-for-everyone>

4. Environmental Studies:

- A. Coursera Course: <https://www.coursera.org/learn/sustainability>
- B. Coursera Course: <https://www.coursera.org/learn/global-environmental-management>
- C. Coursera Course: <https://www.coursera.org/learn/environmental-science>
- D. LinkedIn Learning Course: <https://www.linkedin.com/learning/introduction-to-esg-environmental-social-and-governance>
- E. LinkedIn Learning Course: <https://www.linkedin.com/learning/climate-change-a-top-esg-concern>

Learning Pathway BCA 3rd Semester

(At least one certification from the given pool of subjects is mandatory within the duration of 2nd Year)

1. BCACC301: Design Analysis of Algorithms:

- A. Design and Analysis of Algorithms - <https://www.coursera.org/programs/iem-faculty-learning-program-rtvr7/learn/cpsc-8400-design-and-analysis-of-algorithms?source=search>
- B. Algorithms and Complexity - <https://www.coursera.org/programs/iem-faculty-learning-program-rtvr7/learn/algorithms-and-complexity?source=search>
- C. Algorithms, Part I - <https://www.coursera.org/programs/iem-faculty-learning-program-rtvr7/learn/algorithms-part1?source=search>
- D. Algorithms, Part II - <https://www.coursera.org/programs/iem-faculty-learning-program-rtvr7/learn/algorithms-part2?source=search>

2. BCACC302: Operating Systems:

- A. Operating Systems - <https://www.coursera.org/programs/iem-faculty-learning-program-rtvr7/learn/bits-operating-systems?source=search>
- B. Introduction to Operating Systems Specialization - <https://www.coursera.org/programs/iem-faculty-learning-program-rtvr7/specializations/codio-introduction-operating-systems?source=search>

3. Google AI Essentials Specialization: <https://www.coursera.org/specializations/ai-essentials-google>

4. Java Programming and Software Engineering Fundamentals: <https://www.coursera.org/specializations/java-programming>

5. Mathematics for Machine Learning and Data Science: <https://www.coursera.org/specializations/mathematics-for-machine-learning-and-data-science>

6. Object Oriented Java Programming: Data Structures and Beyond: <https://www.coursera.org/specializations/java-object-oriented>

7. NET Core Mastery: Advanced Techniques for Exp Developers: <https://www.coursera.org/specializations/dotnet-adv-techniques-for-exp-developer>

8. Exam Prep (NCA-GENL): NVIDIA-Certified Generative AI LLMs: <https://www.coursera.org/specializations/exam-prep-nca-genl-nvidia-certified-generative-ai-llms-associate>

9. Mastering GitHub for Developers and DevOps: <https://www.coursera.org/specializations/packt-mastering-github-for-developers-and-devops>

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| 10. Node.js Mastery: Streams, Patterns & High-Performance Apps: https://www.coursera.org/specializations/packt-node-js-mastery-streams-patterns-and-high-performance-apps |
| 11. Microsoft Power BI: Data Analysis Professional: https://www.coursera.org/specializations/microsoft-power-bi-data-analysis-professional |
| 12. LLM Engineering: Prompting, Fine-Tuning, Optimization & RAG: https://www.coursera.org/specializations/llm-engineering-prompting-fine-tuning-optimization-rag |
| 13. Applied Object Detection & Segmentation: https://www.coursera.org/specializations/applied-object-detection-segmentation |
| 14. Advanced App Development in Android: https://www.coursera.org/specializations/advanced-app-android |
| 15. Complete Web Development: HTML, CSS, JS & PHP Projects: https://www.coursera.org/specializations/packt-complete-web-development-html-css-js-and-php-projects |
| 16. Object Oriented Java Programming: Data Structures and Beyond: https://www.coursera.org/specializations/java-object-oriented |
| 17. Modern Web Development Specialization: https://www.coursera.org/specializations/modern-web-development-specialization |

BCA 4th SEMESTER

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NPTEL Courses for BCA 4th Semester

(Any one certification is mandatory)

1. **Programming with Java-** https://onlinecourses.nptel.ac.in/e-learning/preview/noc26_cs153
2. **Computer Networks -** https://onlinecourses.nptel.ac.in/e-learning/preview/noc26_cs99
3. **Database Management System:** https://onlinecourses.nptel.ac.in/e-learning/preview/noc22_cs91

BCA 4th Semester Phygital Learning Subjects

(At least one certification from each pool for two subjects is mandatory)

1. Database Management System:

- A. Coursera Course: <https://www.coursera.org/learn/introduction-to-relational-databases>

2. Programming with Java:

- A. Coursera Course: <https://www.coursera.org/specializations/object-oriented-programming/>
B. LinkedIn Learning Course: <https://www.linkedin.com/learning/paths/getting-started-as-a-java-developer?u=229219690>

3. Computer Networks:

- A. Coursera Course: <https://www.coursera.org/browse/information-technology/networking>
B. LinkedIn Learning Course: <https://www.linkedin.com/learning/cisco-ccna-200-301-cert-prep-1-network-fundamentals-and-access>

Learning Pathway BCA 4th Semester

(At least one certification from the given pool of subjects is mandatory within the duration of 2nd Year)

1. Database Management System:

- A. Database Management Systems - <https://www.coursera.org/programs/iem-faculty-learning-program-rtyr7/learn/cpsc-6620-database-management-systems?source=search>
- B. Database Structures and Management with MySQL - <https://www.coursera.org/programs/iem-faculty-learning-program-rtyr7/learn/database-structures-and-management-with-mysql?source=search>
- C. Database Management Essentials - <https://www.coursera.org/programs/iem-faculty-learning-program-rtyr7/learn/database-management?source=search>

2. Programming with Java:

- A. Object Oriented Java Programming: Data Structures and Beyond Specialization - <https://www.coursera.org/programs/iem-faculty-learning-program-rtyr7/specializations/java-object-oriented?source=search>
- B. Java Programming Fundamentals Specialization - <https://www.coursera.org/programs/iem-faculty-learning-program-rtyr7/specializations/java-programming-fundamentals?source=search>
- C. Programming in Java: A Hands-on Introduction Specialization - <https://www.coursera.org/programs/iem-faculty-learning-program-rtyr7/specializations/hands-on-java?source=search>

3. Google AI Essentials Specialization: <https://www.coursera.org/specializations/ai-essentials-google>

4. Java Programming and Software Engineering Fundamentals: <https://www.coursera.org/specializations/java-programming>

5. Mathematics for Machine Learning and Data Science: <https://www.coursera.org/specializations/mathematics-for-machine-learning-and-data-science>

6. Object Oriented Java Programming: Data Structures and Beyond: <https://www.coursera.org/specializations/java-object-oriented>

7. NET Core Mastery: Advanced Techniques for Exp Developers: <https://www.coursera.org/specializations/dotnet-adv-techniques-for-exp-developer>

8. Exam Prep (NCA-GENL): NVIDIA-Certified Generative AI LLMs: <https://www.coursera.org/specializations/exam-prep-nca-genl-nvidia-certified-generative-ai-llms-associate>

9. Mastering GitHub for Developers and DevOps: <https://www.coursera.org/specializations/packt-mastering-github-for-developers-and-devops>

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| 10. Node.js Mastery: Streams, Patterns & High-Performance Apps: https://www.coursera.org/specializations/packt-node-js-mastery-streams-patterns-and-high-performance-apps |
| 11. Microsoft Power BI: Data Analysis Professional: https://www.coursera.org/specializations/microsoft-power-bi-data-analysis-professional |
| 12. LLM Engineering: Prompting, Fine-Tuning, Optimization & RAG: https://www.coursera.org/specializations/llm-engineering-prompting-fine-tuning-optimization-rag |
| 13. Applied Object Detection & Segmentation: https://www.coursera.org/specializations/applied-object-detection-segmentation |
| 14. Advanced App Development in Android: https://www.coursera.org/specializations/advanced-app-android |
| 15. Complete Web Development: HTML, CSS, JS & PHP Projects: https://www.coursera.org/specializations/packt-complete-web-development-html-css-js-and-php-projects |
| 16. Object Oriented Java Programming: Data Structures and Beyond: https://www.coursera.org/specializations/java-object-oriented |
| 17. Modern Web Development Specialization: https://www.coursera.org/specializations/modern-web-development-specialization |

BCA 5th SEMESTER

BCA 2026 Course structure

SEMESTER 5

SL NO	TYPES OF COURSE	SUB CODE	SUB NAME	L	T	P	S	TOTAL CONTA CT HRS	CRED IT POINT S
THEORY									
1	Computer Science & Application	BCACC501	Introduction to Machine learning	3	1	0	0	4	4
2	Multidisciplinary	BCAMD501	Software Engineering	3	1	0	0	4	4
3	Computer Science & Application	BCACL502	Introduction to Cloud Computing and visualization	3	1	0	0	4	4
4	Computer Science & Application	BCACS502	Introduction to Cyber Security	3	1	0	0	4	4
5	Computer Science & Application	BCAIR502	Introduction to IoT Architecture and Robotics	3	1	0	0	4	4
6	Computer Science & Application	BCAMM502	Introduction to Computer Graphics	3	1	0	0	4	4
7	Computer Science & Application	BCAQC502	Introduction to Quantum Computing	3	1	0	0	4	4
8	Computer Science & Application	BCAWP502	Introduction to web development using PHP and MySQL	3	1	0	0	4	4
9	Value Added Course	BCAGS501	General Studies & Current Affairs-V	2	1	0	0	2	2
PRACTICAL									
10	Computer Science & Application	BCACC591	Machine learning with Python lab	0	0	4	0	4	2
11	Computer Science & Application	BCACL592	Cloud Deployment Lab	0	0	4	0	4	2
12	Computer Science & Application	BCACS592	Cyber Security Lab	0	0	4	0	4	2
13	Computer Science & Application	BCAIR592	IOT Application Development Lab	0	0	4	0	4	2

NPTEL Courses for BCA 5th Semester
(Any one certification is mandatory)

Note: NPTEL is not mandatory in the 5th semester. However, students are encouraged to enroll in relevant NPTEL courses to enhance their knowledge and skills.

The list of available NPTEL courses can be accessed here:

https://docs.google.com/spreadsheets/d/e/2PACX1vT0VPb0_8Klf6b_vmnf2xeMF0eb79YX3rmluZjuxxkGA7Kadg_WLLatyIM1c9QQ1PZQPZvSjL3FKhB/pubhtml?urp=gmail_link

BCA 5th Semester Phygital Learning Subjects

(At least one certification from each pool for two subjects is mandatory)

1. Introduction to Machine learning

- A. Coursera Course: <https://www.coursera.org/learn/machine-learning-with-python>
- B. LinkedIn Learning Course: <https://www.linkedin.com/learning/machine-learning-with-python-foundations>

2. Software Engineering

- A. Coursera Course: <https://www.coursera.org/learn/introduction-to-software-engineering>
- B. LinkedIn Learning Course: https://www.linkedin.com/learning/software-engineering-principles-by-pearson?upsellOrderOrigin=default_guest_learning&trk=default_guest_learning

3. Introduction to Cloud Computing and visualization

- A. Coursera Course: <https://www.coursera.org/search?query=cloud%20computing%20>
- B. LinkedIn Learning Course: https://www.linkedin.com/learning/software-engineering-principles-by-pearson?upsellOrderOrigin=default_guest_learning&trk=default_guest_learning

4. Introduction to Cyber Security:

- A. Coursera Course: [Google Cybersecurity Professional Certificate | Coursera](#)
- B. LinkedIn Learning Course: <https://www.linkedin.com/learning/cybersecurity-foundations-22006082/understanding-the-cybersecurity-frameworks-and-standards?contextUrn=urn%3Ali%3AlyndaLearningPath%3A62325687498eb392c62d0c73>

Learning Pathway BCA 5th Semester

(At least one certification from the given pool of subjects is mandatory within the duration of 3rd Year)

1. Machine learning with Python:

- A. Machine Learning with Python - <https://www.coursera.org/programs/iem-faculty-learning-program-rtvr7/learn/machine-learning-with-python?source=search>
- B. Data Analysis with Python - <https://www.coursera.org/programs/iem-faculty-learning-program-rtvr7/learn/data-analysis-with-python?source=search>
- C. Mastering Machine Learning Algorithms using Python Specialization - <https://www.coursera.org/programs/iem-faculty-learning-program-rtvr7/specializations/packt-mastering-machine-learning-algorithms-using-python?source=search>

2. Data Science: <https://www.coursera.org/specializations/jhu-data-science>

3. AI Agent Developer: <https://www.coursera.org/specializations/ai-agents>

4. Generative AI Software Engineering Specialization: <https://www.coursera.org/specializations/generative-ai-software-engineering>

5. IBM DevOps, Cloud, and Agile Foundations: <https://www.coursera.org/specializations/devops-cloud-and-agile-foundations>

6. Advanced Machine Learning on Google Cloud: <https://www.coursera.org/specializations/advanced-machine-learning-tensorflow-gcp>

7. Data Engineering, Big Data, and Machine Learning on GCP: <https://www.coursera.org/specializations/gcp-data-machine-learning>

8. Modern Data Architecture & Lakehouse Engineering: <https://www.coursera.org/specializations/modern-data-architecture-and-lakehouse-engineering>

9. Building AI Cloud Apps with Microsoft Azure: <https://www.coursera.org/specializations/building-ai-cloud-apps-microsoft-azure>

10. Fundamentals of Computer Network Security: <https://www.coursera.org/specializations/computer-network-security>

11. Modern Data Analytics with Python, Excel & Generative AI: <https://www.coursera.org/specializations/modern-data-analytics-with-python-excel-and-genai>

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| 12. Linux and Private Cloud Administration on IBM Power Systems: https://www.coursera.org/specializations/linux-private-cloud-administration-power-systems |
| 13. Exam Prep: AWS Certified DevOps Engineer – Professional: https://www.coursera.org/specializations/exam-prep-dop-c02-aws-certified-devops-engineer-professional |
| 14. Exam Prep (DEA-C01): AWS Certified Data Engineer – Associate: https://www.coursera.org/specializations/exam-prep-aws-certified-data-engineer-associate |
| 15. Intermediate to Advanced: Professional Figma UI / UX Design: https://www.coursera.org/specializations/intermediatetoadvancedprofessionalfigma-ui-uxdesign |
| 16. Mastering Operating Systems with IBM AIX: https://www.coursera.org/specializations/mastering-operating-systems-with-ibm-aix |
| 17. Mastering AI: Neural Nets, Vision System, Speech Recognition: https://www.coursera.org/specializations/mastering-ai-neural-nets-vision-speech |
| 18. AI Security: Security in the Age of Artificial Intelligence: https://www.coursera.org/specializations/ai-security-security-in-the-age-of-artificial-intelligence |
| 19. Data Engineering on AWS - The Complete Training: https://www.coursera.org/specializations/packt-data-engineering-on-aws-complete-training |
| 20. Applied Python: Web Dev, Machine Learning & Cryptography: https://www.coursera.org/specializations/applied-python-web-dev-machine-learning-cryptography |
| 21. Big Data Foundations with Hadoop and Spark: https://www.coursera.org/specializations/packt-big-data-foundations-with-hadoop-and-spark |

BCA 6th SEMESTER

BCA 2026 Course structure										
SEMESTER 6										
SL NO	TYPES OF COURSE	SUB CODE	SUB NAME	L	T	P	S	TOTAL CONTACT HRS	CREDIT POINTS	
THEORY										
1	Computer Science & Application	BCACC601	Advanced Database Management System with PL/SQL	3	1	0	0	4	4	
2	Computer Science & Application	BCACL602	Security in Cloud Computing	3	1	0	0	4	4	
3	Computer Science & Application	BCACS602	Network Security and Cryptography	3	1	0	0	4	4	
4	Computer Science & Application	BCAIR602	Robot Programming and Kinematics	3	1	0	0	4	4	
5	Computer Science & Application	BCAMM602	Introduction to 3D Modelling and Augmented Reality	3	1	0	0	4	4	
6	Computer Science & Application	BCAQC602	Quantum Information and Computation	3	1	0	0	4	4	
7	Computer Science & Application	BCAWP602	Advanced Web Programming Tools	3	1	0	0	4	4	
8	Value Added Course	BCAGS601	General Studies & Current Affairs -VI	2	1	0	0	2	2	
PRACTICAL										
9	Computer Science & Application	BCACC691	Advanced Database Management System lab	0	0	4	0	4	2	
10	Computer Science & Application	BCACC692	Cloud Computing Tools and Applications	0	0	4	0	4	2	
11	Computer Science & Application	BCACS692	Network Security and Cryptography lab	0	0	4	0	4	2	
12	Computer Science & Application	BCAIR692	Robotics and Automation Lab	0	0	4	0	4	2	
13	Computer Science & Application	BCAMM692	3D Modelling and Augmented Reality lab	0	0	4	0	4	2	
14	Computer Science & Application	BCAQC692	Quantum Information and Computation Lab	0	0	4	0	4	2	
15	Computer Science & Application	BCAWP692	Advanced Web Programming Lab	0	0	4	0	4	2	

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NPTEL Courses for BCA 6th Semester
(Any one certification is mandatory)

Note: NPTEL is not mandatory in the 6th semester. However, students are encouraged to enroll in relevant NPTEL courses to enhance their knowledge and skills.

The list of available NPTEL courses can be accessed here:

https://docs.google.com/spreadsheets/d/e/2PACX1vT0VPb0_8Klf6b_vmnf2xeMF0eb79YX3rmluZjuxxkGA7Kadg_WLLatyIM1c9QQ1PZQPZvSjL3FKhB/pubhtml?urp=gmail_link

BCA 6th Semester Physical Learning Subjects

(At least one certification from each pool for two subjects is mandatory)

5. Software Engineering

- C. Coursera Course: <https://www.coursera.org/learn/introduction-to-software-engineering>
- D. LinkedIn Learning Course: https://www.linkedin.com/learning/software-engineering-principles-by-pearson?upsellOrderOrigin=default_guest_learning&trk=default_guest_learning

6. Introduction to Cloud Computing and visualization:

- C. Coursera Course: <https://www.coursera.org/search?query=cloud%20computing%20>
- D. LinkedIn Learning Course: <https://www.linkedin.com/learning/search?keywords=Cloud%20Computing&u=229219690>

7. Introduction to Cyber Security:

- C. Coursera Course: [Google Cybersecurity Professional Certificate | Coursera](#)
- D. LinkedIn Learning Course: [Understanding the cybersecurity frameworks and standards - Cybersecurity Foundations Video Tutorial | LinkedIn Learning, formerly Lynda.com](#)

8. Introduction to web development using PHP and MySQL:

- C. Coursera Course: <https://www.coursera.org/specializations/web-design>
- D. Coursera Course: <https://www.coursera.org/learn/introduction-html-css-javascript>
- E. Coursera Course: <https://www.coursera.org/learn/introduction-to-front-end-development>
- F. Coursera Course: <https://www.coursera.org/specializations/html-css-javascript-for-web-developers>
- G. Coursera Course: <https://www.coursera.org/learn/packt-intro-to-php-v4qa1>
- H. Coursera Course: <https://www.coursera.org/projects/mysql-with-php>
- I. LinkedIn Learning Course: <https://www.linkedin.com/learning/introduction-to-web-design-and-development-14628245>
- J. LinkedIn Learning Course: <https://www.linkedin.com/learning/html-css-and-javascript-building-the-web>

K. LinkedIn Learning Course: <https://www.linkedin.com/learning/php-with-mysql-essential-training-2-build-a-cms>

Learning Pathway BCA 6th Semester

(At least one certification from the given pool of subjects is mandatory within the duration of 3rd Year)

1. Advanced Database Management System with PL/SQL:

- A. Apply SQL Server Database Management & Analytics Specialization - <https://www.coursera.org/programs/iem-faculty-learning-program-rtvr7/specializations/sql-server-database-management-analytics>
- B. Oracle SQL Databases Specialization - <https://www.coursera.org/programs/iem-faculty-learning-program-rtvr7/specializations/oracle-sql-databases?source=search>
- C. Oracle PL/SQL 21c: Programming & Triggers Specialization - <https://www.coursera.org/programs/iem-faculty-learning-program-rtvr7/specializations/oracle-plsql-21c-programming-triggers>

2. Network Security and Cryptography:

- A. Cryptography - <https://www.coursera.org/programs/iem-faculty-learning-program-rtvr7/learn/cryptography?source=search>
- B. Applied Cryptography Specialization - <https://www.coursera.org/programs/iem-faculty-learning-program-rtvr7/specializations/applied-crypto?source=search>

3. Data Science: <https://www.coursera.org/specializations/jhu-data-science>

4. AI Agent Developer: <https://www.coursera.org/specializations/ai-agents>

5. Generative AI Software Engineering Specialization: <https://www.coursera.org/specializations/generative-ai-software-engineering>

6. IBM DevOps, Cloud, and Agile Foundations: <https://www.coursera.org/specializations/devops-cloud-and-agile-foundations>

7. Advanced Machine Learning on Google Cloud: <https://www.coursera.org/specializations/advanced-machine-learning-tensorflow-gcp>

8. Data Engineering, Big Data, and Machine Learning on GCP: <https://www.coursera.org/specializations/gcp-data-machine-learning>

9. Modern Data Architecture & Lakehouse Engineering: https://www.coursera.org/specializations/modern-data-architecture-and-lakehouse-engineering
10. Building AI Cloud Apps with Microsoft Azure: https://www.coursera.org/specializations/building-ai-cloud-apps-microsoft-azure
11. Fundamentals of Computer Network Security: https://www.coursera.org/specializations/computer-network-security
12. Modern Data Analytics with Python, Excel & Generative AI: https://www.coursera.org/specializations/modern-data-analytics-with-python-excel-and-genai
13. Linux and Private Cloud Administration on IBM Power Systems: https://www.coursera.org/specializations/linux-private-cloud-administration-power-systems
14. Exam Prep: AWS Certified DevOps Engineer – Professional: https://www.coursera.org/specializations/exam-prep-dop-c02-aws-certified-devops-engineer--professional
15. Exam Prep (DEA-C01): AWS Certified Data Engineer – Associate: https://www.coursera.org/specializations/exam-prep-aws-certified-data-engineer-associate
16. Intermediate to Advanced: Professional Figma UI / UX Design: https://www.coursera.org/specializations/intermediate-to-advanced-professional-figma-ui-ux-design
17. Mastering Operating Systems with IBM AIX: https://www.coursera.org/specializations/mastering-operating-systems-with-ibm-aix
18. Mastering AI: Neural Nets, Vision System, Speech Recognition: https://www.coursera.org/specializations/mastering-ai-neural-nets-vision-speech
19. AI Security: Security in the Age of Artificial Intelligence: https://www.coursera.org/specializations/ai-security-security-in-the-age-of-artificial-intelligence

20. **Data Engineering on AWS - The Complete Training:** <https://www.coursera.org/specializations/packt-data-engineering-on-aws-complete-training>

21. **Applied Python: Web Dev, Machine Learning & Cryptography:** <https://www.coursera.org/specializations/applied-python-web-dev-machine-learning-cryptography>

22. **Big Data Foundations with Hadoop and Spark:** <https://www.coursera.org/specializations/packt-big-data-foundations-with-hadoop-and-spark>