Teaching Portfolio

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This document summarises the educational activities at Aarhus University, Denmark (2022–present), and the courses taught at BITS, Pilani – KK Birla Goa Campus, India (2012–2018), and RVR & JC College of Engineering, India (2005–2012). Course websites are available at https://prasad.talasila.in/courses.

Educational Activities at Aarhus University

The ECE department of Aarhus University offers a Masters and PhD course on Engineering of Digital Twins. I teach one week of this course, on *digital twin software architecture and digital twin platforms*. The material comes from *Realising Digital Twins*, a chapter I wrote in the recommended textbook. I have also adapted the programming exercises to run on the Digital Twin as a Service (DTaaS) platform, whose development I coordinate.

Project Supervision

I have been supervising both masters and bachelor students in their thesis, R&D projects and semester projects. An overview of the semester-wise supervision record is given below.

Semester	Course Type	Student Names
Fall, 2026	Bachelor of Engineering (Thesis)	Christoffer Brix, Maciej Brylski, Mikkel, and Tobias
Spring, 2025	Master of Science (R&D Project)	Sandra Føss Sørensen
	Master of Science (Thesis)	Oliver Thomas
Fall, 2025	Bachelor of Engineering (study project)	Oliver Geneser
Spring, 2025	Master of Science (Thesis), visiting student from UNIMORE, Italy	Marco Melloni
	Bachelor of Engineering (Thesis)	Khaled Ibrahim
	Bachelor of Engineering (Thesis)	Mohamed Abdulkarim
Fall, 2024	Bachelor of Engineering (Thesis)	Marcus Jensen
	Bachelor of Engineering (Thesis) in collaboration with BITS, Pilani, India	Aryan Pingle
Spring, 2023	Master of Engineering (Thesis), visiting student from Polytechnic University of Milan	Vanessa Scherma
Fall, 2023	Bachelor of Engineering (Thesis) in collaboration with BITS, Pilani, India	Astitva Sehgal

Internetworking Technologies (CS F413)

Years offered: 2017–18 · 2015–16 · 2014–15

Internetworking Technologies is an advanced elective for final-year undergraduate students with an interest in data networks and systems engineering. I rebuilt the course after joining BITS Pilani – Goa Campus in 2012. The syllabus covers the network stack: Ethernet and LAN switching, IP addressing and subnetting, routing protocols (RIP, OSPF, and BGP), VLAN design, network address translation, transport-layer congestion control, and application-layer protocols including DNS, DHCP, and HTTP. The later part of the course covers network security fundamentals, quality of service, and software-defined networking.

The course has lectures, a wiki-based reading programme, a semester project, lab sessions (in the 2015–16 and 2016–17 editions), and two written tests. Students work from primary sources, including RFC standards, research papers and textbook chapters, and produce written analyses and working implementations. The project began as a design exercise and became a full implementation task in the later offerings. Teams apply routing, addressing and protocol concepts to a realistic network scenario.

Testimonials from Students:

- [Internetworking Technologies is] One of the best courses I've ever taken. The efforts the instructor takes to make the course engaging are unparalleled. The projects were very interesting.
- Internetworking Technologies is the best course I have taken at BITS, Pilani - KK Birla Goa Campus by far. The best part was that I got to learn a variety of interesting and practical things in this course. Everything about this course is almost perfect.
- I took Internetworking Technologies as an elective in 4-1 (semester-7). Apart from an interesting course structure, the course was handled really professionally. The best thing about the course was its stress on various upcoming technologies and data center architectures. There was a lot of emphasis on applying the theory learnt in practical scenarios, through interactive assignments. The course also involved study of research papers in contemporary field , which in itself was a learning experience. All in all, it was a great course, though it requires a certain amount of effort by the student.

Object Oriented Programming (CS F213)

Years offered: 2017–18 · 2016–17 · 2015–16

Object Oriented Programming (OOP) is a second-year course in the computer science curriculum at BITS Pilani – Goa Campus, with around 220 students per semester. The course covers object-oriented design in Java: classes and objects, encapsulation, inheritance, polymorphism, abstract classes, and interfaces. I expanded the syllabus beyond language mechanics to cover software engineering practices used in industry: version control workflows, unit and integration testing, design patterns (creational, structural, and behavioural), refactoring techniques, and an introduction to agile development practices. Weekly lab sessions, quizzes, a wiki and a discussion forum let students turn the lecture material into code.

In the project, student teams plan, build, review and deliver a working software system. Grading lab and project submissions fairly across a cohort this size needed automation, so final-year project students and I built AutolabJS, an open-source automated grading platform. It remained in use at the campus after I left. Students pair program during the lab sessions and review each other's code. Tests, quizzes, lab evaluations and a final project demonstration all carry marks for software quality as well as correctness.