



("ವಿಜಯ ಅಧಿನಿಯಮ ೧೯೯೪" ರ ಅಡಿಯಲ್ಲಿ ಕರ್ನಾಟಕ ಸರ್ಕಾರದಿಂದ ಸ್ಥಾಪಿತವಾದ ರಾಜ್ಯ ವಿಶ್ವವಿದ್ಯಾಲಯ)

Visvesvaraya Technological University

(State University of Government of Karnataka Established as per the VTU Act, 1994)

"Jnana Sangama" Belagavi-590018, Karnataka, India

MINOR DEGREE COURSE LIST

Subject: With reference to Minor degree registered students with USN XXX24XXXXX (Regular), USN XXX25XX4XX (Diploma Lateral Entry), USN XXX25XX6XX (B.Sc Lateral Entry).

- **Eligibility:** Students should obtain a CGPA $\geq$ 5 at the end of third semester and should maintain CGPA $\geq$ 5 until the completion of their regular degree. Students have to complete a Minor degree from 4th semester to 8th semester.
- **Start of Registration:** Minor degree registration begins from the **4th semester**.
- Students who have registered for Minor degree must enrol in the program, attend quizzes and complete exams of program(courses) (totalling to 18 credits) in the **VTU online portal (<https://online.vtu.ac.in/>)** only and programs(courses) done in any other platforms will not be considered to award Minor degree.
- **Selection of course:** Students must select a program from the approved Minor degree list, ensuring the Minor degree is different from their major discipline.

For instance, CS students can't select a Minor program from CS, but can opt for programs from other departments like ECE, Mechanical, etc., based on their interest

- All courses within the Minor should be chosen from a **single domain**, wherein the **Core courses are compulsory**. The remaining credits required to complete the 18-credit requirement for the Minor shall be fulfilled through **Elective courses** within the same domain. If the program offers more than 18 credits, students can choose courses up to the 18-credit limit.
- Exams for these courses will be conducted by **VTU** and it will be online mode.

Below are the steps for:

- A. Program enrollment
- B. Attending quizzes
- C. Exam registration/application
- D. Exam Slot booking
- E. Attending Online Exams

A. Program Enrollment Procedure

1. Minor degree registration application approval is mandatory. Once approved, students can proceed with program enrollment.
2. Click on the **program link** provided next to each program in the below mentioned department wise eligible course list
3. You will be taken to the **Program Overview page** directly, Click on **Apply now** button.
4. Now you are enrolled in the Program, Click on **Profile** Picture then Click **My Programmes**.
5. All the programs that you are enrolled in will be in **My Programmes**. To view courses within a program, click the **View Courses** button. Click on Course name to go to Course content page.
6. You can Start accessing the Course content by clicking on the **Go to Course** button.

NOTE : Students who enroll in a Minor program cannot switch to a different program afterward.

B. Procedure to Attend Quiz

1. **Log in** to your account and navigate to the **Dashboard**.
2. Click on the **My Programmes** tab in the **Dashboard**.
3. Click on View Courses button to go to the Course Content page
4. Click on the **Go to Course** button.

5. You will be taken to the **Course Content** page.
6. Complete watching the video lessons for the course.
7. Scroll down to the **Quiz** section located under the video playing section.
8. Click on the **Quiz** section to view the available quizzes.
9. Select the quiz you want to attend and click on the **Start Quiz** button.
10. Read the **terms and conditions** carefully before proceeding.
11. Agree to the **terms and conditions** and click on the **Start Quiz** button again to begin the quiz.
12. Complete the quiz and **submit** your answers.
13. To **view** your quiz score, click on the **Leaderboard**.
14. You will see your **score** and **ranking** compared to other students.

NOTE : Each internal assessment consists of 25 questions, with a minimum passing score of 40% (10 out of 25). If a student fails to meet this threshold, a second attempt is allowed. However, in the second attempt, only the passing marks (40%) will be considered, regardless of the actual score.

C. Procedure for Exam Registration/Application

1. Click on **Exams** on the navigation bar on the **Home page**.
2. To register for Minor degree exams, click on **Exam Registration – Minor**.
3. **Login** into your account by entering login credentials, it will take you directly to the **exam registration form**.
4. In the dropdown select the course which you would like to appear for the exam.
5. Click on **Submit Application**. Exam fee will be displayed.
6. Click on **Pay now** and complete the payment.
7. You can check the status of your exam application under **Exam Applications** in the student dashboard.

D. Procedure for Exam Slot Booking:

1. **Log in** to your account and navigate to the **Dashboard**.
2. Click on the **Exam Application** tab in the **Dashboard**.

3. Check that your application status is **Paid** for the course you want to book a slot for.
4. Click on the **Book a slot** button in front of the course name to initiate the slot booking process. A slot booking pop-up window will appear, prompting you to select your preferred slot details.
5. Select the **course** from the **dropdown** menu.
6. Choose a **date and time** slot from the available options.
7. Verify that the selected slot details are correct.
8. Click on the **Confirm slot booking** button to **confirm** your slot booking.
9. View Booked Slot Details in **Booked Slot** page for confirmation.

NOTE : Quiz/assignment completion is mandatory before booking an exam slot.

E. Procedure for Attending Online Proctored Exam :

1. On the **Slot booking page**, click the **Start** button next to your course at the scheduled date and time.
2. Read and agree to the **terms and conditions**.
3. Click **Enter Exam** to begin.
4. Complete the exam, **submit** your answers, and view your score

System requirement for online exam:

- Laptop or desktop with a working webcam & microphone.
- minimum of 4 GB RAM & dual core or above processor (pentium dual core or i3/i5/i7).
- 10mbps or above internet connection speed.
- latest updated Google Chrome browser.
- Operating system: Windows or Linux or Mac.

Instructions for attending online exam

- Students should take exams in a room with proper lighting and the background should be clear/plain.
- There should be no/minimal background noise.
- Students are not permitted to take exams in public places or while traveling. A quiet, private location is required

- Once the exam is started students should not navigate to other tabs/windows/browsers.
- Students are not permitted to wear earphones, headphones, or any electronic gadgets, including Bluetooth devices, during the exam/session.
- Exams will be automatically terminated if multiple faces/persons are detected.
- Students should not use or talk on mobile phones during examinations.
- Exams will be terminated automatically if the student's face is not clearly visible/if the student walks away from the screen during the examination.
- Closing the browser directly during the examination will result in termination of the exam automatically.

AEROSPACE ENGINEERING

1. Minor degree in Flight Mechanics - MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-flight-mechanics-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Aerospace Engineering and Allied Branches
01	Introduction to Airplane performance	8 weeks	2	
02	Aircraft Stability and Control	12 weeks	3	
03	Introduction to Aircraft Design	12 weeks	3	
04	Introduction to Aerospace Engineering - Flight	12 weeks	3	
05	Aerodynamic Design of Axial Flow Compressors & Fans	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Combustion in air breathing aero engines	12 weeks	3	
02	Space Flight Mechanics	12 weeks	3	
03	UAV Design - Part II	8 weeks	2	
04	Introduction to Air breathing Propulsion	12 weeks	3	

BIO-TECHNOLOGY AND BIO- SCIENCE/ BIO-ENGINEERING

1. Minor degree in Bio processes:MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-bio-processes-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Bio-technology, bio-science/ bio-engineering and Allied Branches
01	Aspects of Biochemical Engineering	12 weeks	3	
	OR Bioreactor Design and Analysis	8 weeks	2	
02	Principles Of Downstream Techniques In Bioprocess	12 weeks	3	
03	Material and Energy Balances	12 weeks	3	
04	Transport Phenomena in Biological Systems	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Plant Cell Bioprocessing	8 weeks	2	
02	Bioenergy	8 weeks	2	
03	Metabolic Engineering	8 weeks	2	
04	Genetic Engineering: Theory and Application	12 weeks	3	
05	Thermodynamics for Biological Systems : Classical and Statistical Aspect	12 weeks	3	
06	Experimental Biotechnology	12 weeks	3	
07	Fundamental of Fluid Mechanics for Chemical and Biomedical Engineers	12 weeks	3	
08	Environmental Biotechnology	12 weeks	3	

2. Minor degree in Bio- Engineering - MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-bio-engineering-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Bio-technol ogy a and Allied Branches
01	Bioengineering: An Interface with Biology and Medicine	8 weeks	2	
02	Cell Culture Technologies	8 weeks	2	
03	Medical Biomaterials	8 weeks	2	
04	Human Physiology	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Tissue engineering	8 weeks	2	
02	Drug Delivery: Principles and Engineering	12 weeks	3	
03	Biomicrofluidics	4 weeks	1	
04	Introduction to mechanobiology	8 weeks	2	
05	Biomedical nanotechnology	4 weeks	1	
06	Applications of interactomics using Genomics and proteomics technologies	8 weeks	2	
07	Transport Phenomena in Biological Systems	12 weeks	3	
08	Bio-interface Engineering	8 weeks	2	
09	Fundamental of Fluid Mechanics for Chemical and Biomedical Engineers	12 weeks	3	
10	Neural Science for Engineers	12 weeks	3	
11	Organ Printing	8 weeks	2	
12	Cellular biophysics: a framework for quantitative biology	8 weeks	2	
13	Biomechanics	12 weeks	3	
14	Enzyme Sciences and Technology	12 weeks	3	

3. Minor degree in Bioscience - MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-bioscience-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Bio-technology, bio-science/ bio-engineering and Allied Branches
01	Biochemistry	12 weeks	3	
02	Structural Biology	12 weeks	3	
03	Cell Biology: Cellular organization, division and processes	8 weeks	2	
04	Basics of Biology	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Plant Developmental Biology	4 weeks	1	
02	Cell Culture Technologies	8 weeks	2	
03	Human Molecular Genetics	4 weeks	1	
04	Experimental Biochemistry	12 weeks	3	
05	Genetic Engineering: Theory and Application	12 weeks	3	
06	Interactomics : Basics & Applications	12 weeks	3	
07	Introduction to proteomics	8 weeks	2	
08	Experimental Biotechnology	12 weeks	3	
09	Introduction to Developmental Biology	12 weeks	3	
10	Fundamentals of Protein Chemistry	12 weeks	3	
11	Neural Science for Engineers	12 weeks	3	
12	Genome Editing and Engineering	12 weeks	3	
13	RNA Biology	12 weeks	3	
14	Enzyme Sciences and Technology	12 weeks	3	
15	Host-Pathogen Interaction (Immunology)	12 weeks	3	
16	Neurobiology	4 weeks	1	

4. Minor degree in Computational Biology - MOOC

online.vtu.ac.in/programs/1-minor-degree-in-computational-biology-mooc

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Bio-technology, bio-science/bio-engineer and Allied Branches
01	BioInformatics: Algorithms and Applications	12 weeks	3	
02	Programming, Data Structures and Algorithms in Python	8 weeks	2	
	OR MATLAB Programming for Numerical Computation	12 weeks	3	
	OR Introduction to R Software	8 weeks	2	
03	Functional Genomics	4 weeks	1	
04	Next Generation Sequencing Technologies : Data Analysis And Applications	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Computer Aided Drug Design	8 Weeks	2	
02	Introduction to Dynamical Models in Biology	4 weeks	1	
03	Introduction to Proteogenomics	12 weeks	3	
04	Algorithms for protein modelling and engineering	12 weeks	3	
05	Computational Neuroscience	12 weeks	3	
06	Data Analysis for Biologists	8 weeks	2	

CHEMICAL ENGINEERING

1. Minor degree in Fundamentals and Applications of Chemical Engineering - MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-fundamentals-and-applications-of-chemical-engineering-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Chemical Engineering and Allied Branches
01	Basic Principles and Calculations in Chemical Engineering	12 weeks	3	
	OR Material & Energy Balance Computations	12 weeks	3	
02	Chemical Reaction Engineering-I	12 weeks	3	
03	Chemical Engineering Thermodynamics	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Mass Transfer Operations - I	12 weeks	3	
	OR Mass Transfer Operations II	12 weeks	3	
	OR Mechanical Unit Operations	12 weeks	3	
02	Heat Transfer	12 weeks	3	
03	Solid-Fluid Operations	12 weeks	3	

2. Minor degree in Computational Chemical Engineering - MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-computational-chemical-engineering-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Chemical Engineering and
01	Numerical Methods for Engineers	12 weeks	3	
02	Process Control - Design, Analysis and Assessment	12 weeks	3	
	OR Chemical Process Control	8 weeks	2	
	Elective Courses	Duration	Credits	
01	Optimization in Chemical Engineering	12 weeks	3	
02	Computational Fluid Dynamics	12 weeks	3	

03	Model Predictive Control: Theory and Applications	12 weeks	3	Allied Branches
04	Computer Aided Applied Single Objective Optimization	12 weeks	3	
05	Aspen Plus♦ simulation software - a basic course for beginners	12 weeks	3	
06	Mathematical modeling and simulation of chemical engineering process	12 weeks	3	

3. Minor degree in Energy and Environment - MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-energy-and-environment-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Chemical Engineering and Allied Branches
01	Environmental Quality Monitoring & Analysis	12 weeks	3	
02	Non-Conventional Energy Resources	12 weeks	3	
	OR Renewable Energy Engineering: Solar, Wind and Biomass Energy Systems	12 weeks	3	
03	Basic Environmental Engineering and Pollution Abatement	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Waste to Energy Conversion	8 weeks	2	
02	Technologies for clean and renewable energy production	8 weeks	2	
03	Energy conservation and waste heat recovery	12 weeks	3	
04	Energy Economics and Policy	8 weeks	2	
05	Electrochemical Technology in Pollution Control	8 weeks	2	
06	Biomass Conversion and Biorefinery	12 weeks	3	
07	Electrochemical Energy Storage	12 weeks	3	

08	Physics of Renewable Energy Systems	12 weeks	3	
09	Physico-chemical processes for wastewater treatment	12 weeks	3	
10	Hydrogen Energy: Production, Storage, Transportation and Safety	12 weeks	3	
11	Ecology and Environment	8 weeks	2	
12	Energy Conversion Technologies (Biomass And Coal)	8 weeks	2	
13	Sustainable Power Generation Systems	12 weeks	3	
14	Sustainable Energy Technology	12 weeks	3	

4. Minor degree in Chemical Process Design and Engineering Practice - MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-chemical-process-design-and-engineering-practice-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Chemical Engineering and Allied Branches
01	Basic Principles and Calculations in Chemical Engineering	12 weeks	3	
	OR Material & Energy Balance Computations	12 weeks	3	
02	Chemical Reaction Engineering-I	12 weeks	3	
03	Chemical Engineering Thermodynamics	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Process Control - Design, Analysis and Assessment	12 weeks	3	
02	Plant Design and Economics	12 weeks	3	
03	Process Equipment Design	12 weeks	3	
04	Principles and Practices of Process Equipment and Plant Design	12 weeks	3	
05	Chemical Process Utilities	12 weeks	3	
06	Advanced process dynamics	12 weeks	3	
07	Chemical Process Technology	12 weeks	3	

5. Minor degree in Chemical Engineering: Principles, Processes, and Simulations - MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-chemical-engineering-principles-processes-and-simulations-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Chemical Engineering and Allied Branches
01	Basic Principles and Calculations in Chemical Engineering	12 weeks	3	
	OR Material & Energy Balance Computations	12 weeks	3	
02	Chemical Reaction Engineering-I	12 weeks	3	
03	Chemical Engineering Thermodynamics	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Transport phenomena	12 weeks	3	
	OR Continuum Mechanics and Transport Phenomena	12 weeks	3	
	OR Transport Processes	12 weeks	3	
02	Fluid and Particle Mechanics	12 weeks	3	
	OR Fundamental of Fluid Mechanics for Chemical and Biomedical Engineers	12 weeks	3	
03	Advanced Thermodynamics and Molecular Simulations	12 weeks	3	
04	Introduction to interfacial waves	12 weeks	3	
05	Advanced process dynamics	12 weeks	3	
06	Advanced Reaction Engineering	12 weeks	3	
07	Fundamentals Of Statistical Thermodynamics	12 weeks	3	
	OR Applied Statistical Thermodynamics	12 weeks	3	

CIVIL ENGINEERING

1.Minor degree in Construction Materials Technology - MOOC

online.vtu.ac.in/programs/1-minor-degree-in-construction-materials-technology-mooc

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Civil Engineering and Allied Branches
01	Concrete Technology	12 weeks	3	
02	Advanced Concrete Technology	12 weeks	3	
03	Modern Construction materials	12 weeks	3	
04	Basic construction materials	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Hydration, Porosity and Strength of Cementitious Materials	08 weeks	2	
02	Advanced Topics in the Science and Technology of Concrete	04 weeks	1	
03	Characterization of Construction Materials	12 weeks	3	
04	Maintenance and Repair of Concrete Structures	12 weeks	3	
05	Sustainable Materials and Green Buildings	12 weeks	3	
06	Building Materials and Composites	12 weeks	3	
07	Development and Applications of Special Concretes	12 weeks	3	
08	Environmental Impact Assessment	12 weeks	3	
09	Admixtures And Special Concretes	12 weeks	3	

2. Minor degree in Structural Analysis- MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-structural-analysis-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Civil Engineering and Allied Branches
01	Engineering Mechanics - Statics and Dynamics	8 weeks	2	
02	Mechanics of Solids	12 weeks	3	
03	Structural Analysis - I	12 weeks	3	
04	Matrix Method of Structural Analysis	12 weeks	3	
05	Dynamics of Structures	12 weeks	3	
06	Strength Of Materials - IITM	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Mechanics of Materials	12 weeks	3	
	OR Theory of Elasticity	12 weeks	3	
02	Finite Element Method and Computational Structural Dynamics	12 weeks	3	
03	Soil Structure Interaction	12 weeks	3	
04	Sustainable Materials and Green Buildings	12 weeks	3	
05	Advanced Soil Mechanics	12 weeks	3	
06	Elastic Stability of Structures	12 weeks	3	
07	Geotechnical Earthquake Engineering	12 weeks	3	

3. Minor degree in Structural Design - MOOC

online.vtu.ac.in/programs/1-minor-degree-in-structural-design-mooc

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches
01	Engineering Mechanics - Statics and Dynamics	8 weeks	2	
02	Mechanics of Solids	12 weeks	3	
03	Structural Analysis - I	12 weeks	3	

04	Matrix Method of Structural Analysis	12 weeks	3	except Civil Engineering and Allied Branches
05	Design of reinforced concrete structures	12 weeks	3	
06	Design of Steel Structures	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Design of Masonry Structures	12 weeks	3	
02	Bridge Engineering	12 weeks	3	
03	Retrofitting and Rehabilitation of Civil Infrastructure	12 weeks	3	
04	Design of connections in steel structures	4 weeks	1	
05	Geotechnical Earthquake Engineering	12 weeks	3	
06	Earth Sciences For Civil Engineering (Hindi)	8 weeks	2	
07	Advanced Reinforced Concrete Design	12 weeks	3	

4. Minor degree in Environment - MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-environment-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Civil Engineering and Allied Branches
01	Applied Environmental Microbiology	12 weeks	3	
02	Environmental Engineering-Chemical Processes	12 weeks	3	
03	Integrated Waste Management for a Smart City	12 weeks	3	
04	Sustainable Engineering Concepts and Life Cycle Analysis	8 weeks	2	
05	Wastewater Treatment and Recycling	12 weeks	3	
06	Air pollution and Control	12 weeks	3	
	Elective Courses	Duration	Credits	

01	Electronic Waste Management - Issues And Challenges	4 weeks	1	
02	Energy Efficiency, Acoustics and Day lighting in Building	12 weeks	3	
03	Environmental Remediation of Contaminated Sites	12 weeks	3	
04	Sustainable River Basin Management	8 weeks	2	
05	Plastic Waste Management	8 weeks	2	
06	Geographic Information Systems	12 weeks	3	
07	Remote Sensing: Principles and Applications	12 weeks	3	
08	Environmental Impact Assessment	12 weeks	3	
09	Microwave Remote Sensing in Hydrology	12 weeks	3	
10	Groundwater hydrology and management	12 weeks	3	
11	Rural Water Resources Management	12 weeks	3	
12	Environmental Science	12 weeks	3	

FACULTY DISCIPLINE

1. Minor degree in Faculty Domain- Fundamental:MOOC online.vtu.ac.in/programs/1-minor-degree-in-faculty-domain-fundamentalmooc				
Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Faculty Discipline and
01	Effective Engineering Teaching in Practice	4 weeks	1	
02	Ethics in Engineering Practice	8 weeks	2	
03	Introduction to Professional Scientific Communication	4 weeks	1	
	OR Effective Writing	4 weeks	1	
04	Teaching And Learning in Engineering (TALE)	4 weeks	1	
	OR Teaching and Learning in General Programs: TALG	4 weeks	1	
05	Accreditation and Outcome Based Learning	8 weeks	2	

	OR Outcome Based Pedagogic Principles for Effective Teaching	4 weeks	1	Allied Branches
	OR NBA Accreditation and Teaching - Learning in Engineering (NATE)	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Learning Analytics Tools	12 weeks	3	
02	Introduction to Research	8 weeks	2	
03	Introduction to Basic Cognitive Processes	8 weeks	2	
04	Designing learner-centric e-learning in STEM disciplines	4 weeks	1	
05	Handling Large-Scale Unit Level Data Using STATA	8 weeks	2	
06	Towards an Ethical Digital Society: From Theory to Practice	4 weeks	1	

2. Minor degree in Faculty Domain- Advanced:MOOC

online.vtu.ac.in/programs/1-minor-degree-in-faculty-domain-advancedmooc

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Faculty Discipline and Allied Branches
01	Effective Engineering Teaching in Practice	4 weeks	1	
02	Ethics in Engineering Practice	8 weeks	2	
03	Introduction to Professional Scientific Communication	4 weeks	1	
04	Teaching And Learning in Engineering (TALE)	4 weeks	1	
	OR Teaching and Learning in General Programs: TALG	4 weeks	1	
05	Accreditation and Outcome Based Learning	8 weeks	2	
	OR Outcome Based Pedagogic Principles for Effective Teaching	4 weeks	1	

	OR NBA Accreditation and Teaching - Learning in Engineering (NATE)	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Designing Learner-Centric MOOCs	4 weeks	1	
02	Qualitative Research Methods and Research Writing	12 weeks	3	
	OR Learning Analytics Tools	12 weeks	3	
03	Development Research Methods	12 weeks	3	
04	Educational Leadership	12 weeks	3	
	OR Organization Development and Change in 21st Century	8 weeks	2	
05	Introduction on Intellectual Property to Engineers and Technologists	8 weeks	2	
06	Intellectual Property	12 weeks	3	
07	Patent Law for Engineers and Scientists	12 weeks	3	
08	Training of Trainers	12 weeks	3	
09	Entrepreneurship	12 weeks	3	
10	Towards an Ethical Digital Society: From Theory to Practice	4 weeks	1	
11	Education for Sustainable Development	12 weeks	3	
12	Training and Development	12 weeks	3	
13	Leadership and Team Effectiveness	12 weeks	3	

HUMANITIES AND SOCIAL SCIENCE

1. Minor degree in English Studies: - MOOC https://online.vtu.ac.in/programs/1-minor-degree-in-english-studies-mooc				
Sl. No	Core Courses (Compulsory)	Duration	Credits	
01	Introduction to Cultural Studies	12 weeks	3	

02	Literary Criticism (From Plato to Leavis)	12 weeks	3	All branches except Humanities and Social science and Allied Branches
	OR Literary Theory and Literary Criticism	8 weeks	2	
	OR Introduction to Literary Theory	8 weeks	2	
03	English Literature of the Romantic Period, 1798 - 1832	8 weeks	2	
04	Feminist Writings	12 weeks	3	
	OR Gender and Literature	8 weeks	2	
05	History of English Language and Literature	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Indian Fiction in English	12 weeks	3	
	OR Introduction to Modern Indian Drama	8 weeks	2	
02	Twentieth Century Fiction	12 weeks	3	
	OR The Nineteenth-Century English Novel	12 weeks	3	
03	American Literature & Culture	12 weeks	3	
04	Disability Studies: An introduction	8 weeks	2	
05	Postcolonial Literature	4 weeks	1	
06	Introduction to World Literature	12 weeks	3	
07	Literature and Life	12 weeks	3	
08	Contextualizing Gender	12 weeks	3	

2. Minor Degree in Psychology - MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-psychology-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	
01	Introduction to Psychology	8 weeks	2	
	OR Positive Psychology	8 weeks	2	
	OR Human Behavior	8 weeks	2	

				All branches except Humanities and Social science and Allied Branches
02	Introduction to Cognitive Psychology	12 weeks	3	
	OR Introduction to Advanced Cognitive Processes	8 weeks	2	
03	Introduction to Brain & Behaviour	8 weeks	2	
	Elective Courses	Duration	Credits	
01	How the Brain Creates Mind	4 weeks	1	
	OR Psychiatry - An Overview and How the Brain Creates Mind	8 weeks	2	
	OR Psychology of Everyday	4 weeks	1	
	OR The Psychology of Language	8 weeks	2	
	OR Perspectives on Neurolinguistic	4 weeks	1	
	OR Language and Mind	8 weeks	2	
02	Consumer Psychology	8 weeks	2	
03	Health research fundamentals	8 weeks	2	
04	Disability Studies: An introduction	8 weeks	2	
05	The Science of Happiness and Wellbeing	8 weeks	2	
06	Yoga and Positive Psychology for Managing Career and Life	8 weeks	2	

COMPUTER SCIENCE

1. Minor degree in Artificial Intelligence - MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-artificial-intelligence-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Computer science and Allied Branches
01	Artificial Intelligence Search Methods For Problem Solving	12 weeks	3	
	OR An Introduction to Artificial Intelligence	12 weeks	3	
02	Artificial Intelligence: Knowledge Representation and Reasoning	12 weeks	3	
03	Programming, Data Structures and Algorithms in Python	8 weeks	2	
	OR Python for Data Science	4 weeks	1	
04	Introduction to Machine Learning	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Deep Learning	12 weeks	3	
	OR Deep Learning for Computer Vision	12 weeks	3	
02	Reinforcement Learning	12 weeks	3	
03	AI: Constraint Satisfaction	8 weeks	2	
04	Computer Vision	12 weeks	3	
05	Natural Language Processing	12 weeks	3	
	OR Applied Natural Language Processing	12 weeks	3	
06	Practical Machine Learning with Tensorflow	8 weeks	2	
07	Affective Computing	12 weeks	3	

2. Minor degree in Data Science-MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-data-science-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Computer science and Allied Branches
01	Python for Data Science	4 weeks	1	
	OR Programming, Data Structures and Algorithms in Python	8 weeks	2	
02	Introduction to Data Analytics	8 weeks	2	
	OR Data Science for Engineers	8 weeks	2	
	OR Data Analytics with Python	12 weeks	3	
03	Introduction to Machine Learning	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Deep Learning	12 weeks	3	
	OR Deep Learning for Computer Vision	12 weeks	3	
02	Reinforcement Learning	12 weeks	3	
03	Artificial Intelligence : Search Methods For Problem solving	12 weeks	3	
	OR An Introduction to Artificial Intelligence	12 weeks	3	
04	Artificial Intelligence: Knowledge Representation and Reasoning	12 weeks	3	
05	Computer Vision	12 weeks	3	
06	Natural Language Processing	12 weeks	3	
	OR Applied Natural Language Processing	12 weeks	3	
07	Practical Machine Learning with Tensor flow	8 weeks	2	
08	Learning Analytics Tools	12 weeks	3	
09	Probability for Computer Science	8 weeks	2	

3. Minor degree in Programming-MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-programming-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Computer science and Allied Branches
01	Programming, Data Structures and Algorithms in Python	8 weeks	2	
	OR Data Structure and Algorithms using Java	12 weeks	3	
02	Programming in Modern C++	12 weeks	3	
03	Programming in Java	12 weeks	3	
	OR Object Oriented System Development using UML, Java and Patterns	12 weeks	3	
04	Introduction to Database Systems	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Data Science for Engineers	8 weeks	2	
02	Cloud computing	12 weeks	3	
03	Introduction to Internet of Things	12 weeks	3	
04	Introduction to Machine Learning	12 weeks	3	
05	Modern Application Development	12 weeks	3	

4. Foundation for Computing-MOOC

<https://online.vtu.ac.in/programs/1-foundation-for-computing-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Computer
01	Discrete Mathematics	12 weeks	3	
02	Design and Analysis of Algorithms	8 weeks	2	
03	Programming, Data Structures and Algorithms in Python	8 weeks	2	
04	Theory of Computation	8 weeks	2	

	Elective Courses	Duration	Credits	science and Allied Branches
01	Randomized Algorithms	12 weeks	3	
02	Parallel Algorithms	12 weeks	3	
03	Modern Algebra	8 weeks	2	
04	Graph Theory	8 weeks	2	
05	Computational Geometry	12 weeks	3	
06	Arithmetic Circuit Complexity	12 weeks	3	
07	Foundations of Cryptography	12 weeks	3	
08	Computer Graphics	8 weeks	2	
09	Computational Complexity	12 weeks	3	
10	Secure Computation: Part I	12 weeks	3	
11	Parameterized Algorithms	12 weeks	3	
12	Probability for Computer Science	12 weeks	3	

5. Minor degree in Systems:MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-systemsmooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Computer science and Allied Branches
01	Compiler Design	12 weeks	3	
02	Introduction to Operating Systems	8 weeks	2	
	OR Operating System	12 weeks	3	
	OR Operating System Fundamentals	12 weeks	3	
03	Computer Networks and Internet Protocol	12 weeks	3	
04	Introduction to Database Systems	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Cloud computing	12 weeks	3	
02	Information Security - 5 - Secure Systems Engineering	12 weeks	3	
03	Introduction to parallel programming with OpenMP and MPI	8 weeks	2	
04	Introduction to Internet of Things	8 weeks	2	

05	Multi-Core Computer Architecture – Storage And Interconnects	12 weeks	3	
06	Advanced Computer Architecture	12 weeks	3	
07	Ethical Hacking	12 weeks	3	
08	Introduction to Blockchain Technology and Applications	8 weeks	2	
	OR Blockchain Architecture Design and Use Cases	12 weeks	3	
09	GPU Architectures and Programming	12 weeks	3	
10	C-Based VLSI Design	12 weeks	3	
11	Real-Time Systems	12 weeks	3	
12	Introduction to Computer and Network Performance Analysis using Queuing Systems	4 weeks	1	
13	Foundation of Cloud IoT Edge ML	8 weeks	2	
14	Design and Engineering of Computer Systems	8 weeks	2	

ELECTRICAL ENGINEERING

1. Minor degree in VLSI Designs - MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-vlsi-designs-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Electrical Engineering and Allied Branches
01	Basic electrical circuits	12 weeks	3	
	OR Network Analysis	12 weeks	3	
02	Analog circuits	12 weeks	3	
	OR Microelectronics: Devices to Circuits	12 weeks	3	
03	Digital Electronic Circuits	12 weeks	3	

	OR Digital Circuits	12 weeks	3	
04	Fundamentals of semiconductor devices	12 weeks	3	
	OR Introduction to Semiconductor Devices	12 weeks	3	
05	Microprocessors and Microcontrollers	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Hardware modeling using verilog	8 weeks	2	
02	VLSI Physical Design	12 weeks	3	
03	Mapping Signal Processing Algorithms to Architectures	12 weeks	3	
04	Digital IC Design	12 weeks	3	
05	Power Management Integrated Circuits	12 weeks	3	
06	Microprocessors and Interfacing	12 weeks	3	
07	Introduction to Time - Varying Electrical Networks	12 weeks	3	
08	System Design Through VERILOG	8 weeks	2	
09	Circuit Analysis for Analog Designers	12 weeks	3	
10	Design and Analysis of VLSI Subsystems	12 weeks	3	
11	Physics of Nanoscale Devices	12 weeks	3	
12	Phase-locked loops	12 weeks	3	
13	VLSI Interconnects	8 weeks	2	
14	Semiconductor device modeling and Simulation	12 weeks	3	
15	VLSI Design Flow: RTL to GDS	12 weeks	3	

2. Minor degree in Communication and Signal Processing - MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-communication-and-signal-processing-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	
01	Principles of Signals and Systems	12 weeks	3	

	OR Signals and Systems	12 weeks	3	All branches except Electrical Engineering/ EC
02	Digital Signal Processing	12 weeks	3	
	OR Discrete Time Signal Processing	8 weeks	2	
03	Probability Foundations for Electrical Engineers	8 weeks	2	
04	Principles of Communication Systems - I	12 weeks	3	
05	Principles of Communication Systems: Part - II	8 weeks	2	
	OR Principles of Digital Communications	12 weeks	3	
06	Applied Linear Algebra	12 weeks	3	
07	Communication Networks	12 weeks	3	
08	Signal Processing Techniques And Its Applications	12 weeks	3	
	Elective Courses	Duration	Credits	
01	An Introduction to Information Theory	8 weeks	2	
	OR An Introduction to Coding Theory	8 weeks	2	
	OR Information Theory	12 weeks	3	
02	Introduction to Wireless and Cellular Communications	12 weeks	3	
03	Digital Image Processing	12 weeks	3	
	OR Image Signal Processing	12 weeks	3	
04	Multirate DSP	12 weeks	3	
05	Principles and Techniques of Modern Radar Systems	12 weeks	3	
06	Statistical Signal Processing	12 weeks	3	
07	Stochastic Modeling and the Theory of Queues	12 weeks	3	
08	Signal Processing for mm Wave communication for 5G and beyond	12 weeks	3	
09	Concentration inequalities	8 weeks	2	
10	Stochastic control and communication	12 weeks	3	
11	Semiconductor device modeling and Simulation	12 weeks	3	
12	Modern Computer Vision	12 weeks	3	
13	डिजिटलस्विचिंग (Digital Switching)	8 weeks	2	
14	Simulation Of Communication Systems Using Matlab	12 weeks	3	
15	Introduction To Adaptive Signal Processing	8 weeks	2	
16	Machine Learning And Deep Learning -- Fundamentals And Applications	12 weeks	3	

3. Minor degree in Power Systems and Power Electronics - MOOC

online.vtu.ac.in/programs/1-minor-degree-in-power-systems-and-power-electronics-mooc

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Electrical Engineering and Allied Branches
01	Basic electrical circuits	12 weeks	3	
	OR Network Analysis	12 weeks	3	
02	Electrical machines - I	12 weeks	3	
	OR Electrical Machines - II	12 weeks	3	
03	Power System Engineering	12 weeks	3	
	OR Power system analysis	12 weeks	3	
04	Fundamentals of Power Electronics	12 weeks	3	
	OR Power Electronics	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Control engineering	12 weeks	3	
02	Electrical Measurement and Electronic Instruments	12 weeks	3	
03	Computer Aided Power System Analysis	12 weeks	3	
04	Fundamentals of Electric Drives	8 weeks	2	
05	High Power Multilevel Converters- Analysis, Design and Operational Issues	12 weeks	3	
06	Power Management Integrated Circuits	12 weeks	3	
07	DC Power Transmission Systems	12 weeks	3	
08	Design of Power Electronic Converters	8 weeks	2	
09	Power System Protection and Switchgear	8 weeks	2	
10	Power System Protection	12 weeks	3	
11	Smart Grid: Basics to Advanced Technologies	12 weeks	3	
12	Power Quality	12 weeks	3	
13	Control and Tuning Methods in Switched Mode Power Converters	12 weeks	3	
14	Operation and Planning of Power Distribution Systems	12 weeks	3	
15	Digital Protection of Power System	8 weeks	2	
16	Digital Control in Switched Mode Power Converters and FPGA-based Prototyping	12 weeks	3	

17	Economic Operations And Control Of Power Systems	12 weeks	3	
18	Design Of Electric Motors	12 weeks	3	
19	Sustainable Power Generation Systems	12 weeks	3	

4. Minor degree in Control and Instrumentation - MOOC

online.vtu.ac.in/programs/1-minor-degree-in-control-and-instrumentation-mooc

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Electrical Engineering and Allied Branches
01	Principles of Signals and Systems	12 weeks	3	
	OR Signals and Systems	12 weeks	3	
02	Basic electrical circuits	12 weeks	3	
	OR Network Analysis	12 weeks	3	
03	Control engineering	12 weeks	3	
	OR Control systems	12 weeks	3	
04	Electrical Measurement and Electronic Instruments	12 weeks	3	
05	Analog circuits	12 weeks	3	
	OR Analog Electronic Circuit	12 weeks	3	
	OR Analog Circuits	8 weeks	2	
	OR Microelectronics: Devices to Circuits	12 weeks	3	
06	Microprocessors and Microcontrollers	12 weeks	3	
07	Applied Linear Algebra	12 weeks	3	
08	Transducers For Instrumentation	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Linear System Theory	12 weeks	3	
	OR Linear Dynamical Systems	8weeks	2	
02	Control System Design	12 weeks	3	
03	Industrial Instrumentation	12 weeks	3	
04	Design for internet of things	8 weeks	2	
05	Advanced IOT Applications	8weeks	2	
06	Sensors and Actuators	12 weeks	3	
07	Statistical Signal Processing	12 weeks	3	

08	Nonlinear System Analysis	12 weeks	3	
09	Mathematical Aspects of Biomedical Electronic System Design	12 weeks	3	
10	Introduction to Biomedical Imaging Systems	12weeks	3	

5. Minor degree in Photonics - MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-photonics-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Electrical Engineering and Allied Branches
01	Introduction to Photonics	12 weeks	3	
02	Optical Engineering	12 weeks	3	
03	Applied Electromagnetic For Engineers	12 weeks	3	
	OR Transmission Lines and Electromagnetic Waves	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Optical Sensors	4 weeks	1	
02	Optical communications	12 weeks	3	
03	Computational Electro magnetics	12 weeks	3	
04	Fiber Optics	8 weeks	2	
05	Microwave Engineering	12 weeks	3	
06	Photonic integrated circuit	12 weeks	3	
07	Biophotonics	12 weeks	3	
08	Fiber Optic Communication Technology	12 weeks	3	
09	Semiconductor Optoelectronics	12 weeks	3	
10	Ultrafast Optics and Spectroscopy	12 weeks	3	
11	Laser: Fundamentals and Applications	8 weeks	2	
12	Optical Spectroscopy and Microscopy : Fundamentals of optical measurements and instrumentation	12 weeks	3	
13	Optical Fiber Sensors	12 weeks	3	
14	Integrated Photonics Devices and Circuits	12 weeks	3	

15	Advanced Microwave Guided-Structures and Analysis	12 weeks	3	
16	Fundamentals Of Nano And Quantum Photonics	12 weeks	3	
17	RF and Microwave Networks	12 weeks	3	
18	Optical Wireless Communications for Beyond 5G Networks and IoT	12 weeks	3	
19	Nanobiophotonics: Touching Our Daily Life	12 weeks	3	
20	Nanophotonics, Plasmonics, And Metamaterials	12 weeks	3	

MANAGEMENT

1. Minor degree in Marketing - MOOC https://online.vtu.ac.in/programs/1-minor-degree-in-marketing-mooc				
Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Management and Allied Branches
01	Marketing Management-I	8 weeks	2	
02	Marketing Management - II	8 weeks	2	
03	Consumer Behaviour	8 weeks	2	
04	Marketing research and analysis	8 weeks	2	
	Elective Courses	Duration	Credits	
01	Services Marketing: A Practical Approach	4 weeks	1	
02	Sales and Distribution Management	8 weeks	2	
03	Management of Field Sales	4weeks	1	
04	Global Marketing Management	12 weeks	3	
05	Marketing Research and Analysis - II	12 weeks	3	
06	Managing Services	8weeks	2	

07	Customer Relationship Management	8 weeks	2	
08	Retail Management	8 weeks	2	
09	Introduction To Marketing Essentials	12 weeks	3	
10	Integrated Marketing Communication	12 weeks	3	
11	International Marketing	8 weeks	2	

2. Minor degree in Operations- MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-operations-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Management and Allied Branches
01	Introduction to probability and Statistics	4 weeks	1	
	OR Data Analysis and Decision Making - I	12 weeks	3	
02	Introduction to Operations Research	8 weeks	2	
03	Operations and Supply Chain Management	12 weeks	3	
04	Introduction to Data Analytics	8 weeks	2	
	OR Business Statistics	12 weeks	3	
Sl. No	Elective Courses	Duration	Credits	
01	Project management for managers	12 weeks	3	
02	Total Quality Management - I	8 weeks	2	
03	Total Quality Management - II	8 weeks	2	
04	Strategy: An Introduction to game Theory	8 weeks	2	
05	Six Sigma	12 weeks	3	
06	Quality Design and Control	12 weeks	3	
07	Supply Chain Analytics	8 weeks	2	
08	Management of Inventory Systems	12 weeks	3	
09	Decision modeling	8 weeks	2	
10	Decision-Making Under Uncertainty	4 weeks	1	

11	Design and Analysis of Experiments	12weeks	3	
12	Practitioners Course in Descriptive, Predictive and Prescriptive Analytics	8 weeks	2	
13	Business Analytics for Management Decision	12 weeks	3	
14	Selected Topics in Decision Modeling	8 weeks	2	
15	Data Analysis & Decision Making - II	12 weeks	3	
16	Data Analysis & Decision Making - III	12 weeks	3	
17	MCDM Techniques Using R	4 weeks	1	
18	Manufacturing Strategy	8 weeks	2	
19	Advanced Green Manufacturing Systems	12 weeks	3	
20	Toyota Production System	8 weeks	2	
21	The Future of Manufacturing Business: Role of Digital Technologies	8 weeks	2	
22	The Future of Manufacturing Business: Role of Digital Technologies	8 weeks	2	
23	Automation in Production Systems and Management	12 weeks	3	
24	Decision making with spreadsheet	12 weeks	3	

3. Minor Degree in Operations, Finance and Strategic Management - MOOC

online.vtu.ac.in/programs/1-minor-degree-in-operations-finance-and-strategic-management-mooc

Sl. No	Course (Compulsory)	Duration	Credits	
01	Introduction to Operations Research	8 weeks	2	All branches except Management
02	Marketing Management-I	8 weeks	2	

03	Operations and Supply Chain Management	12 weeks	3	and Allied Branches
04	Financial Accounting	8 weeks	2	
	OR Decision making using financial accounting	8 weeks	2	
	OR Financial accounting – IIT Mandi	12 weeks	3	
05	Principles of Management	12 weeks	3	
06	The Future of Manufacturing Business: Role of Digital Technologies	8 weeks	2	
	Elective Courses	Duration	Credits	
01	Business Analytics for Management Decision	12 weeks	3	
02	Automation in Production Systems and Management	12 weeks	3	
03	Management of Inventory Systems	12 weeks	3	
04	Integrated Marketing Communication	12 weeks	3	

4. Minor degree in Patents and Intellectual Property Rights - MOOC

online.vtu.ac.in/programs/1-minor-degree-in-patents-and-intellectual-property-rights-mooc

Sl. No	Core Courses (Compulsory)	Duration	Credits	
01	Patent Law for Engineers and Scientists	12 weeks	3	All branches except Management and Allied Branches
02	Patent Search for Engineers and Lawyers	8 weeks	2	
03	Patent Drafting for Beginners	4 weeks	1	
04	Roadmap for patent creation	8 weeks	2	
	Elective Courses	Duration	Credits	
01	Intellectual Property Rights and Competition Law	8 weeks	2	
02	Innovation, Business Models and Entrepreneurship	8 weeks	2	
03	Innovation by Design	4weeks	1	
04	Managing Intellectual Property in Universities	4weeks	1	

05	Integrated Marketing Communication	12 weeks	3	
06	Managing Services	8weeks	2	

5. Minor degree in Economics - MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-economics-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	
01	An Introduction to Microeconomics	12 weeks	3	All branches except Management and Allied Branches
	OR Microeconomics: Theory & Applications	12 weeks	3	
02	Engineering Econometrics	12 weeks	3	
	OR Introduction to Econometrics	12 weeks	3	
	OR Applied Econometrics	12 weeks	3	
	OR Econometric Modelling	8 weeks	2	
03	Economic Growth and Development	8 weeks	2	
	Elective Courses	Duration	Credits	
01	Infrastructure Economics	8 weeks	2	
02	Energy Economics and Policy	8 weeks	2	
	OR Energy Resources, Economics and Environment	12 weeks	3	
03	Introduction to Environmental Economics	12 weeks	3	
	OR Environmental & Resource Economics	12 weeks	3	
04	Economics of Health and Health Care	8 weeks	2	
05	Game theory	8 weeks	2	
	OR Strategy: An Introduction to game Theory	8 weeks	2	
06	Economics of IPR	4 weeks	1	
07	Mathematics for Economics - I	12 weeks	3	

6. Minor degree in Managerial Economics - MOOC

online.vtu.ac.in/programs/1-minor-degree-in-managerial-economics-mooc

Sl. No	Core Courses (Compulsory)	Duration	Credits	
01	Foundation Course in Managerial Economics	8 weeks	2	All branches except Management and Allied Branches
	OR Managerial Economics	12 weeks	3	
02	An Introduction to Microeconomics	12 weeks	3	
	OR Microeconomics: Theory & Applications	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Engineering Econometrics	12 weeks	3	
	OR Introduction to Econometrics	12 weeks	3	
	OR Applied Statistics and Econometrics	12 weeks	3	
	OR Applied Econometrics	12 weeks	3	
	OR Econometric Modelling	8 weeks	2	
02	Game theory	8 weeks	2	
	OR Strategy: An Introduction to game Theory	8 weeks	2	
03	Business Statistics	12 weeks	3	
04	Decision making using financial accounting	8weeks	2	
05	Financial Institutions and Markets	12 weeks	3	
06	Introduction to Operations Research	8weeks	2	
07	Decision-Making Under Uncertainty	4 weeks	1	
08	Economics of IPR	4 weeks	1	
09	Automation in Production Systems and Management	12 weeks	3	
10	Business and Sustainable Development	4 weeks	1	
11	Computer Aided Decision Systems - Industrial practices using Big Analytics	12 weeks	3	
12	Organizational Design Change and Transformation	12 weeks	3	
13	Mergers, Acquisitions and Corporate Restructuring	8weeks	2	
14	Business Development: From Start to Scale	12 weeks	3	
15	Investment Management	8weeks	2	
16	Artificial Intelligence (AI) for Investments	12 weeks	3	

7. Minor Degree in Economics and Finance - MOOC

online.vtu.ac.in/programs/1-minor-degree-in-economics-and-finance-mooc

Sl. No	Core Courses (Compulsory)	Duration	Credits	
01	An Introduction to Microeconomics	12 weeks	3	All branches except Management and Allied Branches
	OR Microeconomics: Theory & Applications	12 weeks	3	
02	Financial Mathematics	12 weeks	3	
03	Behavioural and Personal Finance	8 weeks	2	
	Elective Courses	Duration	Credits	
01	Decision making using financial accounting	8 weeks	2	
02	Financial Institutions and Markets	12 weeks	3	
03	Probability and Stochastics for Finance	8 weeks	2	
	OR Introduction to Probability Theory and Stochastic Processes	12 weeks	3	
	OR Introduction to Stochastic Processes	12 weeks	3	
04	Corporate Finance	8 weeks	2	
05	Security Analysis & Portfolio Management	12 weeks	3	
06	Investment Management	8 weeks	2	

METALLURGICAL AND MATERIALS ENGINEERING

1. Minor degree in Materials Joining - MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-materials-joining-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	
01	Weldability of Metals	8 weeks	2	All branches except Metallurgical
	OR Welding Metallurgy	12 weeks	3	
02	Welding Processes	12 weeks	3	

	OR Joining Technologies for Metals	12 weeks	3	and Allied Branches
	Elective Courses	Duration	Credits	
01	Advances in Welding and Joining Technologies	8 weeks	2	
02	Theory and Practice of Non-Destructive Testing	8 weeks	2	
03	Analysis and Modelling of Welding	8 weeks	2	
04	Welding of Advanced High Strength Steels for Automotive Applications	4weeks	1	
05	Thermo-Mechanical and Thermo-Chemical Processes	8 weeks	2	
06	Aqueous Corrosion and Its Control	12 weeks	3	
07	Cathodic Protection Engineering	4 weeks	1	
08	Finite element modelling of welding processes	12 weeks	3	
09	Corrosion Failures and Analysis	8 weeks	2	
10	Mechanical Behaviour of Materials (Part ♦ I)	12 weeks	3	

2. Minor Degree in Electronics Materials - MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-electronics-materials-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	
01	Physics of Materials	12 weeks	3	All branches except Metallurgical and Allied Branches.
02	Fundamentals of electronic device fabrication	4 weeks	1	
03	Fundamentals of electronic materials and devices	8 weeks	2	
04	Fundamentals of semiconductor devices	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Solar Photovoltaics: Principles, Technologies & Materials	8 weeks	2	
02	Material Characterization	12 weeks	3	
03	Solid State Physics	8 weeks	2	
04	Mechanical Behaviour of Materials (Part ♦ I)	12 weeks	3	

3. Minor Degree in Materials Characterization - MOOC

online.vtu.ac.in/programs/1-minor-degree-in-materials-characterization-mooc

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Metallurgical and Allied Branches
01	X-ray Crystallography & Diffraction	12 weeks	3	
02	Fundamentals of X-ray diffraction and Transmission electron microscopy	8 weeks	2	
03	Fundamentals of optical and scanning electron microscopy	8 weeks	2	
04	Techniques of Material Characterization	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Elementary Stereology for Quantitative Metallography	4 weeks	1	
02	Theory and Practice of Non-Destructive Testing	8 weeks	2	
03	Analytical chemistry	12 weeks	3	
04	Texture in Materials	12 weeks	3	
05	Mechanical Behaviour of Materials (Part ♦ I)	12 weeks	3	

4. Minor Degree in Minor in Metallurgy - MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-minor-in-metallurgy-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Metallurgical and Allied Branches
01	Ironmaking and Steelmaking	12 weeks	3	
02	Aqueous Corrosion and Its Control	12 weeks	3	
03	Mechanical Behaviour of Materials	12 weeks	3	
04	Material Characterization	12 weeks	3	
05	Introduction to Materials Science and Engineering	12 weeks	3	
06	Thermodynamics And Kinetics Of Materials	12 weeks	3	

Sl. No	Elective Courses	Duration	Credits	
01	Modelling of Tundish Steelmaking Process in Continuous Casting	8 weeks	2	
02	Introduction to Mineral Processing	12 weeks	3	
03	Corrosion/Environmental Degradation/Surface Engineering	12 weeks	3	
04	Welding Processes	12 weeks	3	
05	Powder Metallurgy	12 weeks	3	
06	Corrosion - Part II	8 weeks	2	
07	Thermo-Mechanical and Thermo-Chemical Processes	8 weeks	2	
08	Dealing with Materials Data: Collection, Analysis and Interpretation	12 weeks	3	
09	Properties of Materials (Nature and Properties of Materials: III)	8 weeks	2	
10	Diffusion in Multicomponent Solids	12 weeks	3	
11	Corrosion Failures and Analysis	8 weeks	2	
12	Mechanical Behavior of Materials (Part ♦ I)	12 weeks	3	

MECHANICAL ENGINEERING

1. Minor Degree in Computational Engineering - MOOC https://online.vtu.ac.in/programs/1-minor-degree-in-computational-engineering-mooc				
Sl. No	Core Courses (Compulsory)	Duration	Credits	
01	Engineering Mechanics	12 weeks	3	All branches except Mechanical
02	Numerical Methods for Engineers	12 weeks	3	

03	Basics of Finite Element Analysis-I	8 weeks	2	Engineering and Allied Branches
	OR Introduction to Finite Volume Methods I	8 weeks	2	
04	Finite Element Method: Variational Methods to Computer Programming	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Foundations of Computational Materials Modelling	12 weeks	3	
02	A short lecture series on contour integration in the complex plane	4 weeks	1	
03	Fundamentals of Compressible Flow	12 weeks	3	
04	High Performance Computing for Scientists and Engineers	8 weeks	2	
05	Fundamentals of Convective Heat Transfer	12 weeks	3	
06	Computational Fluid Dynamics using Finite Volume Method	12 weeks	3	
07	Optimization from fundamentals	12 weeks	3	
08	Evolutionary Computation for Single and Multi-Objective Optimization	8 weeks	2	
09	Tools in Scientific Computing	8 weeks	2	

2. Minor degree in Computational Thermo Fluids - MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-computational-thermo-fluids-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	
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01	Introduction to Fluid Mechanics	12 weeks	3	All branches except Mechanical Engineering and Allied Branches
	OR Advanced Fluid Mechanics	12 weeks	3	
	OR Viscous Fluid Flow	12 weeks	3	
	OR Conduction And Convection: Fundamentals And Applications	12 weeks	3	
02	Numerical methods	8 weeks	2	
03	Computational Fluid Dynamics	12 weeks	3	
	OR Foundation of Computational Fluid Dynamics	8 weeks	2	
	OR Computational Fluid Dynamics for Incompressible Flows	12 weeks	3	
	OR Computational Fluid Dynamics using Finite Volume Method	12 weeks	3	
	OR Computational Fluid Dynamics and Heat Transfer	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Turbulent Combustion: Theory and Modelling	12 weeks	3	
02	Fundamentals of Compressible Flow	12 weeks	3	
03	Fundamentals of Convective Heat Transfer	12 weeks	3	
04	Computational Continuum Mechanics	12 weeks	3	
05	Optimization from fundamentals	12 weeks	3	
06	Evolutionary Computation for Single and Multi-Objective Optimization	8 weeks	2	
07	Fundamentals of Combustion	12 weeks	3	
08	Interfacial Fluid Mechanics	12 weeks	3	

3. Minor Degree in Advanced Mechanics - MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-advanced-mechanics-mooc>

Sl. No	Core Courses(Compulsory)	Duration	Credits	All branches except Mechanical Engineering and Allied Branches
01	Engineering Mechanics	12 weeks	3	
02	Solid Mechanics	12 weeks	3	
03	Vibrations of structures	12 weeks	3	
	OR Introduction to Mechanical Vibration	8 weeks	2	
	OR Vibration and Structural Dynamics	8 weeks	2	
04	Basics of Finite Element Analysis-I	8 weeks	2	
	OR Basics of Finite Element Analysis - II	8 weeks	2	
	OR Finite Element Method: Variation Methods to Computer Programming	12 weeks	3	
05	Basics of Materials Engineering	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Numerical Methods for Engineers	12 weeks	3	
02	Foundations of Computational Materials Modelling	12 weeks	3	
03	A short lecture series on contour integration in the complex plane	4 weeks	1	
04	Dynamic Behaviour of Materials	12 weeks	3	
05	Theory of Elasticity	12 weeks	3	
06	Computational Continuum Mechanics	12 weeks	3	
07	Theory of Composite Shells	8 weeks	2	
08	Finite element modelling of welding processes	12 weeks	3	
09	Advanced Dynamics	12 weeks	3	
10	Mechanics and Control of Robotic Manipulators	8 weeks	2	
11	Engineering fracture mechanics	12 weeks	3	
12	Experimental Stress Analysis	12 weeks	3	

13	Vibrations of Plates and Shells	12 weeks	3	
14	Dynamics and Control of Mechanical Systems	12 weeks	3	
15	Nonlinear Adaptive Control	12 weeks	3	

4. Minor degree in Propulsion - MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-propulsion-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	
01	Thermodynamics	12 weeks	3	All branches except Mechanical Engineering and Allied Branches
02	Advanced Thermodynamics and Combustion	12 weeks	3	
03	Aircraft Propulsion	12 weeks	3	
04	Rocket Propulsion	12 weeks	3	
05	Applied Thermodynamics for Engineers	12 weeks	3	
06	Fluid Mechanics	12 weeks	3	

5. Minor degree in Energy Systems - MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-energy-systems-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	
01	Thermodynamics	12 weeks	3	All branches except Mechanical Engineering and Allied Branches
02	Applied Thermodynamics for Engineers	12 weeks	3	
03	Fluid Dynamics and Turbo machines	8 weeks	2	
	Heat Transfer	12 weeks	3	

04	OR Conduction and Convection Heat Transfer	12 weeks	3	
	OR Transport Processes I: Heat and Mass Transfer	12 weeks	3	
	OR Fundamentals of Conduction and Radiation	12 weeks	3	
	OR Conduction And Convection: Fundamentals And Applications	12 weeks	3	
05	Power Plant Engineering	8 weeks	2	
Sl. No	Elective Courses	Duration	Credits	
01	Energy conservation and waste heat recovery	12 weeks	3	
02	Bioenergy	8 weeks	2	
	OR Waste to Energy Conversion	8 weeks	2	
03	Energy Economics and Policy	8 weeks	2	
04	Non-Conventional Energy Resources	12 weeks	3	
	OR Technologies for clean and renewable energy production	8 weeks	2	
05	Aircraft Propulsion	12 weeks	3	
06	Selection of Nanomaterials for Energy Harvesting and Storage Application	4 weeks	1	
07	Steam Power Engineering	8 weeks	2	
08	Elements of Solar Energy Conversion	12 weeks	3	
09	Fundamentals of Convective Heat Transfer	12 weeks	3	
10	Advanced Thermodynamics and Combustion	12 weeks	3	

6. Minor degree in Manufacturing Processes and Technology - MOOC

online.vtu.ac.in/programs/1-minor-degree-in-manufacturing-processes-and-technology-mooc

Sl. No	Core Courses (Compulsory)	Duration	Credits	
01	Manufacturing Process Technology I & II	12 weeks	3	All branches except

	OR Theory of Production Processes	12 weeks	3	Mechanical Engineering and Allied Branches
	OR Production Technology: Theory and Practice	12 weeks	3	
02	Manufacturing System Technology Part 1 & 2	12 weeks	3	
03	Mechanics of Machining	8 weeks	2	
04	Industrial Automation and Control	12 weeks	3	
	OR Automation in Manufacturing	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Introduction to Mechanical Micro Machining	12 weeks	3	
02	Metal Cutting and Machine Tools	4 weeks	1	
03	Machinery Fault Diagnosis and Signal Processing	12 weeks	3	
04	Non-Traditional Abrasive Machining Processes- Ultrasonic, Abrasive Jet and Abrasive Water Jet Machining	4 weeks	1	
05	Sustainability through Green Manufacturing Systems: An Applied Approach	8 weeks	2	
06	Rapid Manufacturing	12 weeks	3	
07	Theory and Practice of Non-Destructive Testing	8 weeks	2	
08	Operations Management	12 weeks	3	
09	Mathematical Modelling Of Manufacturing Processes	12 weeks	3	
10	Design for Quality, Manufacturing and Assembly	8 weeks	2	
11	Principles of Industrial Engineering	12 weeks	3	
12	Computer Integrated Manufacturing	12 weeks	3	
13	Machining Science	4 weeks	1	
14	Plastic Working of Metallic Materials	12 weeks	3	
15	Engineering Drawing and Computer Graphics	12 weeks	3	
16	Mechatronics	8 weeks	2	
17	Finite element modelling of welding processes	12 weeks	3	

18	Manufacturing Processes - Casting and Joining	4 weeks	1	
19	Wheeled Mobile Robots	8 weeks	2	
20	Oil Hydraulics and Pneumatics	12 weeks	3	
21	Robotics: Basics and Selected Advanced Concepts	12 weeks	3	
	OR Introduction to Robotics	12 weeks	3	
22	Welding Application Technology	8 weeks	2	
23	Fundamentals of Additive Manufacturing Technologies	12 weeks	3	
24	Design of Mechatronic Systems	12 weeks	3	
25	Laser Based Manufacturing	8 weeks	2	
26	Metal Additive Manufacturing	12 weeks	3	

7. Minor degree in Product Design - MOOC

online.vtu.ac.in/programs/1-minor-degree-in-product-design-mooc

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Mechanical Engineering and Allied Branches
01	Manufacturing Guidelines for Product Design	8 weeks	2	
02	Product Design and Development	4 weeks	1	
03	Product Design and Manufacturing	12 weeks	3	
04	Design Practice	8 weeks	2	
05	Basics of Materials Engineering	12 weeks	3	
06	Production Technology: Theory and Practice	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Design Practice - II	8 weeks	2	
02	Ergonomics in Automotive Design	4 weeks	1	
	OR Ergonomics Workplace Analysis	4 weeks	1	
03	System Design for Sustainability	12 weeks	3	
04	Digital Human Modelling and Simulation for Virtual Ergonomics Evaluation	8 weeks	2	

05	Gear and Gear Unit Design: Theory and Practice	8 weeks	2	
06	Design for Quality, Manufacturing and Assembly	8 weeks	2	
08	Robotics and Control: Theory and Practice	8 weeks	2	
	OR Robotics: Basics and Selected Advanced Concepts	12 weeks	3	
	OR Introduction to Robotics	12 weeks	3	
09	Turbulent Combustion: Theory and Modelling	12 weeks	3	
10	Engineering Drawing and Computer Graphics	12 weeks	3	
11	Mechatronics	8 weeks	2	
12	Manufacturing Processes - Casting and Joining	4 weeks	1	
13	Wheeled Mobile Robots	8 weeks	2	
14	Welding Application Technology	8 weeks	2	
15	Fundamentals of Additive Manufacturing Technologies	12 weeks	3	
16	Design of Mechatronic Systems	12 weeks	3	

8. Minor degree in Advanced Dynamics and Vibration - MOOC

online.vtu.ac.in/programs/1-minor-degree-in-advanced-dynamics-and-vibration-mooc

Sl. No	Core Courses (Compulsory)	Duration	Credits	All branches except Mechanical Engineering and Allied Branches
01	Engineering Mechanics	12 weeks	3	
02	Vibrations of structures	12 weeks	3	
	OR Introduction to Mechanical Vibration	8 weeks	2	
03	Advanced Dynamics	12 weeks	3	
04	Nonlinear Vibration	12 weeks	3	
	Elective Courses	Duration	Credits	
01	Robotics and Control: Theory and Practice	8 weeks	2	
02	Fundamentals of Acoustics	12 weeks	3	

	OR Acoustic and Noise Control	12 weeks	3	
03	Acoustic Materials and Metamaterials	8 weeks	2	
04	A short lecture series on contour integration in the complex plane	4 weeks	1	
05	Computational Continuum Mechanics	12 weeks	3	
06	Muffler Acoustics-Application to Automotive Exhaust Noise Control	12 weeks	3	
07	Mechanics and Control of Robotic Manipulators	8 weeks	2	
08	Vibrations of Plates and Shells	12 weeks	3	
09	Dynamics and Control of Mechanical Systems	12 weeks	3	
10	Nonlinear Adaptive Control	12 weeks	3	

9. Minor degree in Computational Mechanics - MOOC

<https://online.vtu.ac.in/programs/1-minor-degree-in-computational-mechanics-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	
01	Engineering Mechanics	12 weeks	3	All branches except Mechanical Engineering and Allied Branches
02	Numerical Methods for Engineers	12 weeks	3	
03	Basics of Finite Element Analysis-I	8 weeks	2	
	OR Finite Element Method	12 weeks	3	
	OR Introduction to Finite Volume Methods I	8 weeks	2	
04	Finite Element Method: Variational Methods to Computer Programming	12 weeks	3	
	Elective Courses	Duration	Credits	

01	Foundations of Computational Materials Modelling	12 weeks	3	
02	A short lecture series on contour integration in the complex plane	4 weeks	1	
03	Optimization from fundamentals	12 weeks	3	
04	Computational Continuum Mechanics	12 weeks	3	
05	Finite element modeling of welding processes	12 weeks	3	
06	Evolutionary Computation for Single and Multi-Objective Optimization	8 weeks	2	
07	Tools in Scientific Computing	8 weeks	2	
08	Advanced Dynamics	12 weeks	3	
09	Dynamics and Control of Mechanical Systems	12 weeks	3	
10	Nonlinear Adaptive Control	12 weeks	3	

10. Minor Degree in Robotics

<https://online.vtu.ac.in/programs/1-minor-degree-in-robotics-mooc>

Sl. No	Core Courses (Compulsory)	Duration	Credits	
01	Introduction to robotics	12 weeks	3	All branches except Mechanical Engineering and Allied Branches
	OR Mechanism and Robot Kinematics	8 weeks	2	
	OR Robotics and Control: Theory and Practice	8 weeks	2	
	OR Mechanics and Control of Robotic Manipulators	8 weeks	2	
02	Wheeled Mobile Robots	8 weeks	2	
	Elective Courses	Duration	Credits	
01	Sensors and Actuators	12 weeks	3	
02	Microprocessors and Microcontrollers	12 weeks	3	

03	Digital Image Processing	12 weeks	3	
04	Fundamentals of Power Electronics	12 weeks	3	
	OR Power Electronics	12 weeks	3	
05	Embedded Systems Design	12 weeks	3	
	OR Ethical Hacking	12 weeks	3	
06	Industrial Automation and Control	12 weeks	3	
07	Kinematics of Mechanisms and Machines	8 weeks	2	
	OR Mechanics of Human Movement	12 weeks	3	
08	Modelling and Simulation of Dynamic Systems	8 weeks	2	
09	Design of Mechatronic Systems	12 weeks	3	
10	Fundamentals of Artificial Intelligence	12 weeks	3	
	OR An Introduction to Artificial Intelligence	12 weeks	3	
	OR Introduction to Machine Learning	12 weeks	3	
	OR Practical Machine Learning with TensorFlow	8 weeks	2	
	OR Machine Learning, ML	8 weeks	2	
11	Reinforcement Learning	12 weeks	3	
12	Deep Learning	12 weeks	3	
13	Robot Motion Planning	8 weeks	2	

Courses Offered by Various Companies (Paid Courses)

Edutainer India

1. MINOR DEGREE IN ARTIFICIAL INTELLIGENCE https://online.vtu.ac.in/programs/3-minor-degree-in-artificial-intelligence			
Sl. No	Courses	Credits	
01	Artificial Intelligence	3	All, Except Computer
02	How to use ChatGPT	3	

03	Chat GPT for professionals	3	science & allied Branches(AI, DS,IS,ML,)
04	AI enhanced growth Marketing	3	
05	AI driven content mastery for marketers	3	
06	Midjourney	3	

2. MINOR DEGREE IN BUSINESS MANAGEMENT

<https://online.vtu.ac.in/programs/3-minor-degree-in-business-management>

Sl. No	Courses	Credits	
01	Mini MBA in Business	3	All, Except Management
02	Organizational Psychology	3	
03	Sales & Business Development	3	
04	Leadership & Management	3	
05	HR Employee Management	3	
06	Critical thinking, decision making & problem solving	3	

3. MINOR DEGREE IN COMPUTER SCIENCE & TECHNOLOGY

<https://online.vtu.ac.in/programs/3-minor-degree-in-computer-science-technology>

Sl. No	Courses	Credits	
01	Master Computer Science Fundamentals	3	All,Except Computer science&allied
02	Cyber Security, Ethical Hacking and Risk Assessment	3	
03	Python Programming	3	

04	Full Stack Web Development Bootcamp	3	Branches (AI,DS,IS,ML)
05	React JS	3	
06	Project Management	3	

4. MINOR DEGREE IN DIGITAL MARKETING

<https://online.vtu.ac.in/programs/3-minor-degree-in-digital-marketing>

Sl. No	Courses	Credits	
01	Introduction to Digital Marketing	3	All branches
02	Social media marketing	3	
03	SEO & Digital Marketing	3	
04	Blogging, Content marketing and Vlogging	3	
05	AI enhanced growth marketing	3	
06	AI driven content mastery for marketers	3	