1. Proposed Curriculum for B.Tech - 2018 Batch (126 Credits):

Modified as suggested in the 29th Senate Meeting

|  |  |  |
| --- | --- | --- |
| Code | Title | Credits |
| **Semester 1** |  |  |
| ID1054 | Independent Project | 1 |
| MExxxx | Digital Fabrication | 2 |
| MA1110 | Calculus-I | 1 |
| MA1220 | Calculus-II | 2 |
| PH1017 | Classical Physics | 1 |
| EE1010 | Electric Circuits | 1 |
| EE1020 | Magnetic Circuits | 1 |
| EE1110 | Applied Digital Logic Design | 1 |
| EE1083 | Introduction to Computing | 2 |
| EE1350 | Signals and Systems | 1 |
| EE1320 | Internet of Things (IOT) | 1 |
| ID1393 | Introduction to Drones | 1 |
| BM1030 | Bioengineering | 1 |
| LA/CA | LA/CA Elective | 1 |
|  | Total credits | 17 |
|  |  |  |
| **Semester 2** |  |  |
| EE1025 | Independent Project | 1 |
| MA1130 | Vector Calculus | 1 |
| MA1150 | Differential Equations | 1 |
| EE1040\* | Matrix Analysis | 1 |
| EE1370\* | Data Analytics | 2 |
| EE1210 | Basic Control Theory | 1 |
| IDXXxx | Introduction to AI and ML | 1 |
| EE1120 | Digital System Design | 1 |
| EE1360 | Communication Systems | 1 |
| EE1030 | Network Theory and Synthesis | 2 |
| EE1193 | Introduction to Hardware Description Languages | 2 |
| XXxxxx | Free Elective | 1 |
| LA/CA | LA/CA Elective | 1 |
|  | Total credits | 16 |
|  |  |  |
| **Semester 3** |  |  |
| EE2015 | EE Independent Project | 1 |
| CY1017 | Environmental Chemistry - I | 1 |
| CY1031 | Chemistry Lab | 2 |
| EE2350 | DSP | 1 |
| EE2210 | Transformers and DC Machines | 2 |
| EE2010 | Engineering Electromagnetics | 2 |
| EE2310 | Random Processes | 1 |
| EE2133 | Analog Electronics | 2 |
| EE2187 | Semiconductor Fundamentals | 1 |
| EE2188 | Electronic Devices and Circuits | 1 |
| EE2320 | Digital Modulation Techniques | 1 |
| LA/CA | LA/CA Elective | 1 |
|  | Total credits | 16 |
|  |  |  |
| **Semester 4** |  |  |
| EE2025 | EE Independent Project | 1 |
| XXxxxx | Science Elective | 1 |
| MA2130 | Complex Variables | 1 |
| EE2220 | AC Machines | 2 |
| EE2134 | Analog System Design | 2 |
| EE2189 | Physics of MOS Transistors | 2 |
| EE2240 | Control Systems | 2 |
| EE2370 | Advanced DSP | 2 |
| EE2211 | Electrical Machines Lab | 2 |
| EE2340 | Information Sciences | 1 |
| LA/CA | LA/CA Elective | 1 |
|  | Total credits | 17 |
|  |  |  |
| **Semester 5** |  |  |
| IDxxxx | Independent Project | 1 |
| XXxxxx | Science Elective | 1 |
| EE3210 | Smart grid | 1 |
| EE3220 | Power System Practice | 2 |
| EE3220 | Power Electronics | 2 |
| EE3010 | Wave Propagation and Transmission Lines | 2 |
| EE3113 | Introduction to VLSI Design | 2 |
| EE3013 | Data Structures | 2 |
| EExxxx | Core Electives | 3 |
| LA/CA | LA/CA Elective | 1 |
|  | Total credits | 17 |
|  |  |  |
| **Semester 6** |  |  |
| IDxxxx | Independent Project | 1 |
| XXxxxx | Science Elective | 1 |
| XXxxxx | Engineering Elective | 2 |
| EE3260 | Renewable Energy and Power Systems | 1 |
| EE3120 | Microprocessor and Computer Arch | 2 |
| EE3320 | Wireless Communications | 1 |
| EExxxx | Core Electives | 3 |
| XXxxxx | Free Electives | 3 |
| LA/CA | LA/CA Elective | 1 |
|  | Total credits | 15 |
|  |  |  |
| **Semester 7** |  |  |
| EE4015 | EE Independent Project | 3 |
| XXxxxx | Science Elective | 3 |
| EExxxx | Core Electives | 3 |
| EE4180 | Sensor Technology for Intelligent Healthcare | 1 |
| XXxxxx | Free Electives | 2 |
| LAxxxx | Liberal Arts Elective | 1 |
| CAxxxx | Creative Arts Elective | 1 |
|  | Total credits | 14 |
|  |  |  |
| **Semester 8** |  |  |
| EE4025 | EE Independent Project | 3 |
| EExxxx | Core Elective | 6 |
| XXxxxx | Free Elective | 3 |
| ID4006 | Ethics & Values | 1 |
| CAxxxx | Creative Arts Electives | 1 |
|  | Total credits | 14 |
|  |  |  |
| Grand Total | All semesters | 126 |

1. Revised Curriculum for BTech - 2017 Batch (125 Credits)

|  |  |  |
| --- | --- | --- |
| Code | Title | Credits |
| **Semester 1** |  |  |
| ID1054 | Independent Project | 1 |
| MExxxx | Digital Fabrication | 2 |
| MA1110 | Calculus-I | 1 |
| MA1220 | Calculus-II | 2 |
| PH1017 | Classical Physics | 1 |
| EE1010 | Electric Circuits | 1 |
| EE1020 | Magnetic Circuits | 1 |
| EE1110 | Applied Digital Logic Design | 1 |
| EE1120 | Digital System Design | 1 |
| EE1310 | Signals and Communications | 1 |
| EE1320 | Internet of Things (IOT) | 1 |
| BM1030 | Bioengineering | 1 |
| LAxxxx/CA XXXX | LA/CA Elective | 1 |
|  | Total credits | 15 |
|  |  |  |
| **Semester 2** |  |  |
| EE1025 | Independent Project | 1 |
| MA1130 | Vector Calculus | 1 |
| MA1150 | Differential Equations | 1 |
| EE1130 | Analog Electronics | 1 |
| EE1510\* | Matrix Analysis | 1 |
| EE1520\* | Data Analytics | 2 |
| EE1210 | Basic Control Theory | 1 |
| EE1330 | DSP | 1 |
| EE1410 | Data Structures | 2 |
| EE1140 | Semiconductor Fundamentals | 1 |
| EE1150 | Embedded programming | 1 |
| XXxxxx | Free Elective | 1 |
| LA/CA XXXX | LA/CA Elective | 1 |
|  | Total credits | 15 |
|  |  |  |
| **Semester 3** |  |  |
| EE2015 | EE Independent Project | 1 |
| CY1017 | Environmental Chemistry - I | 1 |
| CY1031 | Chemistry Lab | 2 |
| EE2193 | Embedded Programming -II | 1 |
| EE2210 | Transformers and DC Machines | 2 |
| EE2010 | Engineering Electromagnetics | 2 |
| EE2310 | Random Processes | 1 |
| EE2187 | Semiconductor Fundamentals | 1 |
| EE2188 | Electronic Devices and Circuits | 1 |
| EE2137 | Analog Electronics II | 1 |
| EE2320 | Digital Modulation Techniques | 1 |
| ID1393 | Introduction to Drones | 1 |
| LA/CA | LA/CA Elective | 1 |
|  | Total credits | 16 |
|  |  |  |
| **Semester 4** |  |  |
| EE2025 | EE Independent Project | 1 |
| MA2130 | Complex Variables | 1 |
| EE2220 | AC Machines | 2 |
| EE2030 | Network Theory and Synthesis | 2 |
| EE2189 | Physics of MOS Transistors | 2 |
| EE2240 | Control Systems | 2 |
| EE2370 | Advanced DSP | 2 |
| EE2211 | Electrical Machines Lab | 2 |
| IDXXxx | Introduction to AI and ML | 1 |
| EE2340 | Information Sciences | 1 |
| LA/CA | LA/CA Elective | 1 |
|  | Total credits | 17 |
|  |  |  |
| **Semester 5** |  |  |
| IDxxxx | Independent Project | 1 |
| XXxxxx | Science Elective | 1 |
| EE3210 | Smart grid | 1 |
| EE3220 | Power System Practice | 2 |
| EE2230 | Power Electronics | 2 |
| EE3010 | Wave Propagation and Transmission Lines | 2 |
| EE3113 | Introduction to VLSI Design | 2 |
| EExxxx | Core Electives | 3 |
| XXxxxx | Free Elective | 2 |
| LA/CA | LA/CA Elective | 1 |
|  | Total credits | 17 |
|  |  |  |
| **Semester 6** |  |  |
| IDxxxx | Independent Project | 1 |
| XXxxxx | Science Elective | 1 |
| XXxxxx | Engineering Elective | 2 |
| EE3260 | Renewable Energy and Power Systems | 1 |
| EE3120 | Microprocessor and Computer Arch | 2 |
| EE2134 | Analog System Design | 2 |
| EE3320 | Wireless Communications | 1 |
| EExxxx | Core Electives | 3 |
| XXxxxx | Free Electives | 2 |
| LA/CA | LA/CA Elective | 1 |
|  | Total credits | 16 |
|  |  |  |
| **Semester 7** |  |  |
| EE4015 | EE Independent Project | 3 |
| XXxxxx | Science Elective | 3 |
| EExxxx | Core Electives | 3 |
| XXxxxx | Free Electives | 3 |
| EE4180 | Sensor Technology for Intelligent Healthcare systems | 1 |
| LAxxxx | Liberal Arts Elective | 1 |
| CAxxxx | Creative Arts Elective | 1 |
|  | Total credits | 15 |
|  |  |  |
| **Semester 8** |  |  |
| EE4025 | EE Independent Project | 3 |
| XXxxxx | Science Elective | 0 |
| EExxxx | Core Elective | 6 |
| XXxxxx | Free Elective | 3 |
| ID4006 | Ethics & Values | 1 |
| CAxxxx | Creative Arts Electives | 1 |
|  | Total credits | 14 |
|  |  |  |
| Grand Total | All semesters | 125 |

1. Revised 2Yr MTech in Machine Learning (Joint Program with CS)-48 Credits.

|  |  |  |
| --- | --- | --- |
| Semester - I | | |
| C. No. | Course Title | Credits |
| EE5817 | Random Variables | 2 |
| EE5827 | Random Processes | 1 |
| CS6013 | Adv. Data Str. & Algo | 3 |
| EE5609 | Matrix Theory | 3 |
| EE5600 | Introduction to AI & ML | 1 |
| EE5601 | Representation Learning | 1 |
| EE5602 | Probabilistic Graphical Models | 1 |
| Total Credits | | 12 |

|  |  |  |
| --- | --- | --- |
| Semester - II | | |
| EE5603 | Concentration Inequalities | 1 |
| EE5604 | Introduction to Statistical Learning Theory | 1 |
| EE5605 | Kernel Methods | 1 |
| EE5237 | Optimization | 1 |
| EE5606 | Convex optimization | 2 |
| EE 5607 | ML - Hardware Implementation | 1 |
| EE6337 | Deep Learning | 1 |
| EE5608 | Sequence Modelling | 1 |
| EE/CS/MA | Core electives | 3 |
| EE5815 | MTech Thesis Stage - I | 2 |
| Total Credits | | 14 |

|  |  |  |
| --- | --- | --- |
|  | Summer Semester |  |
| EE5825 | MTech Thesis Stage - II | 2 |
|  | Total Credits | 2 |

|  |  |  |
| --- | --- | --- |
|  | Semester - III |  |
| EE5835 | MTech Thesis Stage - III | 10 |
|  | Total Credits | 10 |

|  |  |  |
| --- | --- | --- |
|  | Semester - IV |  |
| EE5845 | MTech Thesis Stage - IV | 10 |
|  | Total Credits | 10 |

1. Self-Study Courses for External Students (Flexible Course Structure - (27.4 Flexible Course Structure)

EE6002: Self Study Course (3 Credits)

EE6003: Self Study Course (3 Credits)

EE6004: Self Study Course (3 Credits)

EE6005: Self Study Course (3 Credits)

Syllabus and course structure will be prepared in consultation with DPGC.

1. Replacing CH6130 with Fractal equivalent courses for MTech - 2016 Systems & Control Batch

M.Tech Students of Systems & Control stream, from the batch of 2016, are supposed to register for a 3-credit course CH6130: Optimization. In the revised fractal curriculum of the Department of Chemical Engineering, CH6130 is divided into

CH6660: Optimization Techniques – 1 credit & CH6820: Nature Inspired Optimization – 2 credits.

1. List of deemed to be core electives for EE MTech Students

CH5010. Numerical Methods – I

CH5020 Numerical Methods-II

CH6450 Introduction to System Identification

CH6650 Introduction to Stochastic Differential Equations

CH6670 Theory of Stochastic Differential Equations

MA5050 Mathematical Methods

MA5110 Fourier Analysis And Applications

MA6150 Discrete Dynamical Systems

MA6080 Measure Theoretic Probability

MA5120 Numerical Linear Algebra

MA6050 Wavelets And Applications

MA6040 Fuzzy Logic Connectives And Their Applications

MA6140 Compressive Sensing

ME5010 Mathematical Methods for Engineers

ME5510 Industrial Automation & Robotics

ME5200 Additive Manufacturing