

## Computer Engineering

### Introduction

The Computer Engineering (CEN) Study Program was established in September 1987 under the Faculty of Computer Studies and since 2011 is under Faculty of Engineering BINUS UNIVERSITY. The CEN Study Program is **re-accredited Grade “A” by the National Board of Higher Education (BAN-PT)** in 2018 and also **accredited by the Engineering Accreditation Commission of ABET, [www.abet.org](http://www.abet.org)** in 2015. The CEN Study Program has various alumni who have gone on to take part in various domains of the business industry. The CEN Study Program was founded to meet the demand for knowledge about computer systems encompassing computer hardware, software, and computer networks. The Institute of Electrical & Electronic Engineers (IEEE) and the Association for Computing Machinery (ACM), well established and world-famous organizations, use the following definition: "Computer Engineering embodies the science and the technology of design, construction, implementation and maintenance of the electronics and the software components of modern computing systems and computer-controlled equipment," and its graduates stated: "Computer Engineers are solidly grounded in the theories and principles of computing, mathematics, and engineering; and apply these theoretical principles to design electronic circuits, software, networks, and computerized equipment and instruments to solve problems in diverse application domains."

Hence, graduates of the CEN Study Program will enjoy the knowledge of computer software and intelligent devices. This will allow graduates to contribute to any application wherever computers are used. The development of Information Technology and the need for experienced computer systems professionals are behind the innovative CEN Program. Currently, the CEN Study Program covers expertise in understanding to build completed computer system solution that consists of electronics and software, ranging from communication systems to intelligent embedded systems.

### Vision

A study program of choice in Computer Engineering, which focuses on Intelligence, Mobility, and Secure Communication technologies, is recognized internationally, champions innovation and produces graduates with international qualification.

### Mission

The mission of Computer Engineering Department are to:

1. Educating students with the knowledge and skills in science and technology in the design, analysis and application of intelligent, mobile, and secure connectivity technologies. We prepare graduates to be ethical professionals and technopreneurs, as well as to continue for advanced degrees in computer engineering or related disciplines in global community.
2. Providing a vibrant learning and research environment that nurtures the most creative, value-added and leadership talents of our graduates for the global community.
3. Improving quality of life by conducting professional services and high impact applied research in Computer Engineering related disciplines.

### Program Objectives

The objectives of the program are:

1. Excel in methodological and computational skills within their professional and communities.
2. Employ effective team player and professional responsibilities to benefit the organizations and society.

3. Sustainably updating their knowledge to meet evolving global requirements.

### Student Outcomes

After completing the study, graduates are:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics;
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors;
3. An ability to communicate effectively with a range of audiences;
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal context;
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives;
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions;
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

### Prospective Career of the Graduates

At the career level, computer engineering offers two principle paths – hardware and software engineer – that support industry 4.0 and multiple subspecialties or areas of concentration, such as:

- Embedded & Intelligence System
- Applied Networking
- Communication Technology
- Internet of Things
- Cyber security
- Cloud Technology
- Machine Learning
- Automation



**BINUS**  
UNIVERSITY

### Curriculum

The Computer Engineering curriculum is developed based on the IEEE-ACM international curriculum as well as the APTIKOM national curriculum. Both are curricula developed by professional engineers and educators in their fields who are members of a professional association. Concerning the two curriculums above, the curriculum used by the Computer Engineering Study Program can produce graduates who can answer local and global challenges.

The curriculum structure of the Computer Engineering Study Program consists of five parts. The first part is the mathematics and basic science composed of 33 credits. The second part is engineering courses consisting of 49 credits including 10 credits of streaming or free electives courses. The third part is the final project consisting of 6 credits, and the last part is the university courses consisting of 58 credits. 3 + 1 enrichment program is in the university courses part that expect the students to face real computer engineering problems that exist in the area of research, industry, community development and entrepreneurship.

**Course Structure**

| Sem                  | Code                                                 | Course Name                                        | SCU | Total |  |
|----------------------|------------------------------------------------------|----------------------------------------------------|-----|-------|--|
| 1                    | CHAR6013010                                          | Character Building: <i>Pancasila</i>               | 2   | 20    |  |
|                      | SCIE6049010                                          | Physics I                                          | 4/1 |       |  |
|                      | MATH6136010                                          | Calculus I                                         | 4   |       |  |
|                      | MATH6137010                                          | Linear Algebra                                     | 4   |       |  |
|                      | MATH6138010                                          | Chemistry                                          | 3   |       |  |
|                      | <b>English University Courses I</b>                  |                                                    |     |       |  |
|                      | ENGL6128010                                          | English in Focus                                   | 2   |       |  |
|                      | ENGL6130010                                          | English for Business Presentation                  | 2   |       |  |
| 2                    | CHAR6014010                                          | Character Building: <i>Kewarganegaraan</i>         | 2   | 20    |  |
|                      | SCIE6050010                                          | Physics II                                         | 4/1 |       |  |
|                      | MATH6139010                                          | Calculus II                                        | 4   |       |  |
|                      | COMP6692010                                          | Physical Computing & Algorithm*                    | 3   |       |  |
|                      | LANG6027010                                          | Indonesian                                         | 2   |       |  |
|                      | ENTR6509001                                          | Entrepreneurship: Ideation                         | 2   |       |  |
|                      | <b>English University Courses II</b>                 |                                                    |     |       |  |
|                      | ENGL6129010                                          | English Savvy                                      | 2   |       |  |
| ENGL6131010          | English for Written Business Communication           | 2                                                  |     |       |  |
| 3                    | MATH6182010                                          | Discrete Mathematics                               | 4   | 21    |  |
|                      | STAT6151010                                          | Probability and Statistic                          | 4   |       |  |
|                      | CPEN6249010                                          | Circuit & Electronics*&&&                          | 4/1 |       |  |
|                      | CPEN6246010                                          | Digital System*.*&&&&                              | 5/1 |       |  |
|                      | COMP6083010                                          | Operating Systems                                  | 2   |       |  |
| 4                    | CHAR6015010                                          | Character Building: <i>Agama</i>                   | 2   | 19    |  |
|                      | CPEN6034010                                          | Computer Organization and Architecture*&&&         | 4   |       |  |
|                      | CPEN6220010                                          | Computer Networks & Information Security*&&&       | 4/1 |       |  |
|                      | CPEN6230010                                          | IOT Design & Application*.*&&&&                    | 5/1 |       |  |
|                      | CPEN6222010                                          | Mobile Application Development for Engineering*&&& | 2   |       |  |
| 5                    | CPEN6224010                                          | System & Project Engineering*                      | 4/1 | 20    |  |
|                      | CPEN6083010                                          | Digital Signal Processing*&&&                      | 2/1 |       |  |
|                      | ENTR6511001                                          | Entrepreneurship: Market Validation                | 2   |       |  |
|                      | <b>Streaming: Communication System</b>               |                                                    |     |       |  |
|                      | CPEN6225010                                          | Telco Network & Switching System*                  | 2   |       |  |
|                      | CPEN6226010                                          | Wireless Communication System*&&&                  | 4   |       |  |
|                      | CPEN6231010                                          | Optical Fiber Communication System*                | 4   |       |  |
|                      | <b>Streaming: Applied Networking</b>                 |                                                    |     |       |  |
|                      | CPEN6227010                                          | Advanced Computer Network*&&&                      | 4   |       |  |
|                      | CPEN6228010                                          | Applied Network Security*                          | 4   |       |  |
|                      | CPEN6232010                                          | Cloud Technology Practice*                         | 2   |       |  |
|                      | <b>Streaming: Embedded &amp; Intelligence System</b> |                                                    |     |       |  |
|                      | CPEN6126010                                          | Cross Platform Application Development*&&&         | 4   |       |  |
|                      | CPEN6233010                                          | Machine Learning Application in Robotic*           | 4   |       |  |
| CPEN6236010          | PLC Programming for Industrial Automation*           | 2                                                  |     |       |  |
| <b>Free Elecives</b> |                                                      |                                                    | 10  |       |  |

| Sem                          | Code                  | Course Name | SCU | Total |
|------------------------------|-----------------------|-------------|-----|-------|
| 6                            | Enrichment Program I  |             | 20  | 20    |
| 7                            | Enrichment Program II |             | 20  | 20    |
| 8                            | CPEN6241010           | Pre-Thesis  | 2   | 6     |
|                              | CPEN6242010           | Thesis      | 4   |       |
|                              | CPEN6255010           | Thesis      | 6   |       |
| <b>Total Credits 146 SCU</b> |                       |             |     |       |

\*) This course is delivered in English

\*\*) Global Learning System Course

\*\*\*) Entrepreneurship Embedded

#### Streaming/Free Electives:

-) For 5<sup>th</sup> Semester: Students are required to choose Streaming or Free Electives. For Free Electives, students are required to choose from the list of Free Electives in Appendix.

#### English University Courses:

-) For 1st Semester: English University Courses I, students with Binus University English Proficiency Test score less than 500 will take English in Focus, and student with test score greater than or equal to 500 will take English for Business Presentation.

-) For 2nd Semester: English University Courses II, students with Binus University English Proficiency Test score less than 500 will take English Savvy, and students with test score greater than or equal to 500 will take English for Written Business Communication.

-) Students must pass English Savvy with a minimum Grade of C.

**Pre-thesis (2 SCU) & Thesis (4 SCU)** can be taken in the 6<sup>th</sup> and/or 7<sup>th</sup> semester by the students who meet the requirements from the Study Program/Program

#### Appendix: Free Electives (5<sup>th</sup> Semester)

| No | Course Owner Department           | Course Code | Course Name                                          | SCU | Semester |
|----|-----------------------------------|-------------|------------------------------------------------------|-----|----------|
| 1  | Business Creation                 | ENTR6494005 | Managing Growing Business                            | 2   | 5        |
| 2  | Business Management               | MGMT6362005 | Global Supply Chain Services                         | 2   | 5        |
| 3  | Business Management               | MGMT6365005 | Current Issue in Service Business and Technology     | 2   | 5        |
| 4  | Business Management               | MGMT6400005 | Supply Chain Strategy                                | 2   | 5        |
| 5  | Global Business Marketing         | MKTG6237005 | Global Strategic Marketing: Asia Pacific Perspective | 4   | 5        |
| 6  | International Business Management | BUSS7009005 | Export-Import Cost Management                        | 2   | 5        |
| 7  | International Business Management | MGMT6370005 | E-Business for International Business                | 2   | 5        |
| 8  | International Business Management | MGMT7169005 | Global Supply Chain Management                       | 2   | 5        |
| 9  | Management                        | BUSS6069005 | Business Simulation                                  | 2   | 5        |
| 10 | Management                        | BUSS6163005 | Organization Development Strategy                    | 2   | 5        |
| 11 | Management                        | BUSS6194005 | Business Negotiation Strategy                        | 2   | 5        |
| 12 | Management                        | ISYS8175005 | E-Business Strategy and Implementation               | 4   | 5        |
| 13 | Management                        | MGMT6063005 | Strategic Management                                 | 2   | 5        |
| 14 | Management                        | MGMT6297005 | Operations Management                                | 4   | 5        |
| 15 | Management                        | MGMT6341005 | Strategic Management                                 | 4   | 5        |
| 16 | Management                        | MGMT6412005 | Customer Relationship Management                     | 2   | 5        |
| 17 | Global Business Marketing         | MKTG6272005 | Marketing Research                                   | 2/2 | 5        |

| No | Course Owner Department         | Course Code | Course Name                                          | SCU | Semester |
|----|---------------------------------|-------------|------------------------------------------------------|-----|----------|
| 18 | Global Business Marketing       | MKTG6294005 | Branding & Omnichannel Retailing                     | 4   | 5        |
| 19 | Finance                         | FINC6189020 | Introduction to Financial Market and Fin-Tech        | 2   | 5        |
| 20 | Marketing Communication         | COMM6523019 | Corporate Event Management                           | 2/2 | 5        |
| 21 | Marketing Communication         | COMM6538019 | Media Promotion & Marketing in Creative Broadcasting | 2   | 5        |
| 22 | Marketing Communication         | COMM6539019 | Media Convergence in Creative Broadcasting           | 2   | 5        |
| 23 | Marketing Communication         | COMM6541019 | Digital Corporate Communication                      | 2/2 | 5        |
| 24 | Marketing Communication         | COMM6542019 | Event Management for Brand                           | 2/2 | 5        |
| 25 | Marketing Communication         | COMM6543019 | Digital Brand Communicaton                           | 2/2 | 5        |
| 26 | Tourism                         | TRSM6141022 | Tourism Destination and Planning Management          | 4   | 5        |
| 27 | Tourism                         | TRSM6160022 | Tourism Transportation                               | 2   | 5        |
| 28 | Tourism                         | TRSM6208022 | Tourism Innovation and Product Development           | 4   | 5        |
| 29 | Architecture                    | ARCH6047014 | Behavior in Architecture                             | 2   | 5        |
| 30 | Architecture                    | ARCH6061014 | Sustainable Architecture                             | 2   | 5        |
| 31 | Civil Engineering               | CIVL6007013 | Harbour Engineering                                  | 2   | 5        |
| 32 | Civil Engineering               | CIVL6035013 | Airport Engineering                                  | 2   | 5        |
| 33 | Civil Engineering               | CIVL6037013 | Railway Engineering                                  | 2   | 5        |
| 34 | Civil Engineering               | CIVL6080013 | Construction Methods & Heavy Equipment               | 2   | 5        |
| 35 | Civil Engineering               | CIVL8056013 | Bridge Engineering                                   | 2   | 5        |
| 36 | Civil Engineering               | COMP6046013 | Computer Applications in Construction Management     | 2   | 5        |
| 37 | Computer Engineering            | CPEN6098010 | Computer Networks                                    | 2/2 | 5        |
| 38 | Computer Engineering            | CPEN6126010 | Cross Platform Application Development               | 4   | 5        |
| 39 | Computer Engineering            | CPEN6225010 | Telco Network & Switching System                     | 2   | 5        |
| 40 | Computer Engineering            | CPEN6232010 | Cloud Technology Practice                            | 2   | 5        |
| 41 | Food Technology                 | FOOD6062015 | Food Quality Assurance System                        | 2/1 | 5        |
| 43 | Food Technology                 | FOOD6063015 | Food Safety & Sanitation                             | 2/1 | 5        |
| 44 | Industrial Engineering          | ISYE6067011 | Global Supply Chain                                  | 2   | 5        |
| 45 | Industrial Engineering          | ISYE6115011 | Transportation Modeling                              | 2   | 5        |
| 47 | Industrial Engineering          | ISYE6130011 | Project Management                                   | 2   | 5        |
| 48 | Computer Science                | COMP6586001 | Embedded Systems                                     | 2   | 5        |
| 49 | Computer Science                | COMP6821001 | Web Programming                                      | 2   | 5        |
| 50 | Computer Science                | COMP6590001 | Geographical Information System                      | 2/2 | 5        |
| 51 | Computer Science                | ISYS6197001 | Business Application Development                     | 2/2 | 5        |
| 52 | Computer Science                | MOBI6059001 | Mobile Programming                                   | 2   | 5        |
| 53 | Game Application and Technology | GAME6085001 | Object Oriented Game Programming                     | 2   | 5        |
| 54 | Animation                       | DSGN6689007 | Concept Art & Production Design                      | 2   | 5        |
| 55 | Animation                       | DSGN6690007 | Animation Storytelling                               | 2   | 5        |
| 56 | Creative Advertising            | DSGN6661007 | Photography                                          | 4   | 5        |
| 57 | Creative Advertising            | DSGN6732007 | Photography                                          | 4   | 5        |
| 58 | Film                            | FILM6059009 | Global Cinema                                        | 4   | 5        |
| 59 | Business Information Technology | ISYS6579003 | Knowledge-Based AI: Cognitive Systems                | 4   | 5        |
| 60 | Information Systems             | ISYS6196003 | Business Analytics                                   | 2   | 5        |

| No | Course Owner Department                   | Course Code | Course Name                                                                              | SCU | Semester |
|----|-------------------------------------------|-------------|------------------------------------------------------------------------------------------|-----|----------|
| 61 | Information Systems                       | ISYS6199003 | Data & Text Mining                                                                       | 4   | 5        |
| 62 | Information Systems                       | ISYS6202003 | Social Informatics                                                                       | 4   | 5        |
| 63 | Information Systems                       | ISYS6289003 | Collaborative Computing                                                                  | 4   | 5        |
| 64 | Information Systems                       | ISYS6402003 | Business Analytics                                                                       | 2/2 | 5        |
| 65 | Information Systems                       | ISYS8066003 | Business Process Management                                                              | 4   | 5        |
| 66 | Information Systems                       | RSCH6466003 | Research Methodology                                                                     | 4   | 5        |
| 67 | Information Systems Accounting & Auditing | ISYS6608003 | IT Service & Risk Management                                                             | 2   | 5        |
| 68 | Information Systems Accounting & Auditing | ISYS6050003 | Information System Audit Fundamental                                                     | 4   | 5        |
| 69 | Data Science                              | DTSC6008001 | Text Mining                                                                              | 2   | 5        |
| 70 | Cyber Security                            | COMP6646001 | Computer Forensic                                                                        | 2   | 5        |
| 71 | Mobile Application & Technology           | MOBI6068001 | Web Design                                                                               | 2   | 5        |
| 72 | International Relations                   | INTR6151029 | Regional Integration in Europe                                                           | 2   | 5        |
| 73 | International Relations                   | INTR6152029 | Regional Integration in America                                                          | 2   | 5        |
| 74 | International Relations                   | INTR6153029 | Regional Integration in East Asia                                                        | 2   | 5        |
| 75 | International Relations                   | INTR6154029 | Regional Integration in Africa and Middle East                                           | 2   | 5        |
| 76 | International Relations                   | INTR6161029 | Political Economy of Global Media                                                        | 2   | 5        |
| 77 | International Relations                   | INTR6162029 | Multiculturalism and Digital Society                                                     | 2   | 5        |
| 78 | International Relations                   | INTR6167029 | International Political Economy of Multinational Corporations                            | 2   | 5        |
| 79 | International Relations                   | INTR6169029 | International Migration: Governance and Rights                                           | 2   | 5        |
| 80 | International Relations                   | INTR8049029 | Global Economic Architecture                                                             | 2   | 5        |
| 81 | Japanese Literature                       | JAPN6116025 | Japanese Corporate Culture and Management (Nihon No Kigyuu Bunka to Manejimento)         | 2   | 5        |
| 82 | Japanese Literature                       | JAPN6145025 | Japanese Grammar I (Bunpou I)                                                            | 4   | 5        |
| 83 | Japanese Literature                       | JAPN6148025 | Japanese Letter I (Kanji I)                                                              | 2   | 5        |
| 84 | Japanese Literature                       | JAPN6149025 | Reading Comprehension I (Dokkai I)                                                       | 2   | 5        |
| 85 | Japanese Literature                       | JAPN6150025 | Ideas and Images of Japanese Culture (Nihon Bunka Aidea to Imeeji)                       | 2   | 5        |
| 86 | Japanese Literature                       | JAPN6173025 | Contemporary Japanese Society Through Various Perspective (Nihon Shakai e no Kangaekata) | 2   | 5        |
| 87 | Japanese Literature                       | JAPN6111025 | Introductory Japanese I                                                                  | 4   | 5        |
| 88 | Business Law                              | LAWS6052028 | Bankruptcy Law                                                                           | 2   | 5        |
| 89 | Business Law                              | LAWS6167028 | Legal Philosophy & Professional Ethics                                                   | 2   | 5        |
| 90 | Business Law                              | LAWS6172028 | Environmental and Natural Resources Law                                                  | 2   | 5        |
| 91 | Business Law                              | LAWS6174028 | Contract & Legislative Drafting                                                          | 2   | 5        |
| 92 | Business Law                              | LAWS6176028 | Tax Law                                                                                  | 2   | 5        |
| 93 | Chinese Literature                        | CHIN6157026 | Chinese Business for Etiquette (Beginner)                                                | 4   | 5        |

| No  | Course Owner Department   | Course Code | Course Name                             | SCU | Semester |
|-----|---------------------------|-------------|-----------------------------------------|-----|----------|
| 94  | Chinese Literature        | CHIN6158026 | Chinese Business in Daily Communication | 4   | 5        |
| 95  | Chinese Literature        | CHIN6159026 | Chinese Character Writing               | 2   | 5        |
| 96  | English Literature        | ENGL6158024 | Writing for Children and Young Adults   | 2   | 5        |
| 97  | English Literature        | ENGL6244024 | Social Media Broadcasting               | 4   | 5        |
| 98  | Primary Teacher Education | EDUC6032030 | Art & Craft                             | 2   | 5        |
| 99  | Primary Teacher Education | EDUC6037030 | Teaching English for Young Learners     | 2   | 5        |
| 100 | Primary Teacher Education | EDUC6061030 | ICT for Distance Learning               | 2   | 5        |

**Enrichment Program I (6<sup>th</sup> Semester) & Enrichment Program II (7<sup>th</sup> Semester):**

-) Student will take one of enrichment program tracks (off campus). See enrichment appendix for the tracks detail.

**Enrichment Track Scheme**

| Track | Semester 6 |    |    |    |    |    |     | Semester 7 |    |    |    |    |    |    |     |
|-------|------------|----|----|----|----|----|-----|------------|----|----|----|----|----|----|-----|
|       | IN         | RS | EN | CD | SA | IS | etc | IN         | RS | EN | CD | SA | IS | FS | etc |
| 1     | v          |    |    |    |    |    |     | v          |    |    |    |    |    |    |     |
| 2     | v          |    |    |    |    |    |     |            | v  |    |    |    |    |    |     |
| 3     | v          |    |    |    |    |    |     |            |    | v  |    |    |    |    |     |
| 4     | v          |    |    |    |    |    |     |            |    |    | v  |    |    |    |     |
| 5     | v          |    |    |    |    |    |     |            |    |    |    | v  |    |    |     |
| 6     | v          |    |    |    |    |    |     |            |    |    |    |    | v  |    |     |
| 7     | v          |    |    |    |    |    |     |            |    |    |    |    |    | v  |     |
| 8     |            | v  |    |    |    |    |     | v          |    |    |    |    |    |    |     |
| 9     |            | v  |    |    |    |    |     |            | v  |    |    |    |    |    |     |
| 10    |            | v  |    |    |    |    |     |            |    | v  |    |    |    |    |     |
| 11    |            | v  |    |    |    |    |     |            |    |    | v  |    |    |    |     |
| 12    |            | v  |    |    |    |    |     |            |    |    |    | v  |    |    |     |
| 13    |            | v  |    |    |    |    |     |            |    |    |    |    | v  |    |     |
| 14    |            | v  |    |    |    |    |     |            |    |    |    |    |    | v  |     |
| 15    |            |    | v  |    |    |    |     | v          |    |    |    |    |    |    |     |
| 16    |            |    | v  |    |    |    |     |            | v  |    |    |    |    |    |     |
| 17    |            |    | v  |    |    |    |     |            |    | v  |    |    |    |    |     |
| 18    |            |    | v  |    |    |    |     |            |    |    | v  |    |    |    |     |
| 19    |            |    | v  |    |    |    |     |            |    |    |    | v  |    |    |     |
| 20    |            |    | v  |    |    |    |     |            |    |    |    |    | v  |    |     |
| 21    |            |    | v  |    |    |    |     |            |    |    |    |    |    | v  |     |
| 22    |            |    |    | v  |    |    |     | v          |    |    |    |    |    |    |     |
| 23    |            |    |    | v  |    |    |     |            | v  |    |    |    |    |    |     |
| 24    |            |    |    | v  |    |    |     |            |    | v  |    |    |    |    |     |
| 25    |            |    |    | v  |    |    |     |            |    |    | v  |    |    |    |     |
| 26    |            |    |    | v  |    |    |     |            |    |    |    | v  |    |    |     |
| 27    |            |    |    | v  |    |    |     |            |    |    |    |    | v  |    |     |
| 28    |            |    |    | v  |    |    |     |            |    |    |    |    |    | v  |     |
| 29    |            |    |    |    | v  |    |     | v          |    |    |    |    |    |    |     |
| 30    |            |    |    |    | v  |    |     |            | v  |    |    |    |    |    |     |
| 31    |            |    |    |    | v  |    |     |            |    | v  |    |    |    |    |     |
| 32    |            |    |    |    | v  |    |     |            |    |    | v  |    |    |    |     |

| Track | Semester 6 |    |    |    |    |    |     | Semester 7 |    |    |    |    |    |    |     |
|-------|------------|----|----|----|----|----|-----|------------|----|----|----|----|----|----|-----|
|       | IN         | RS | EN | CD | SA | IS | etc | IN         | RS | EN | CD | SA | IS | FS | etc |
| 33    |            |    |    |    | v  |    |     |            |    |    |    | v  |    |    |     |
| 34    |            |    |    |    | v  |    |     |            |    |    |    |    | v  |    |     |
| 35    |            |    |    |    | v  |    |     |            |    |    |    |    |    | v  |     |
| 36    |            |    |    |    |    | v  |     | v          |    |    |    |    |    |    |     |
| 37    |            |    |    |    |    | v  |     |            | v  |    |    |    |    |    |     |
| 38    |            |    |    |    |    | v  |     |            |    | v  |    |    |    |    |     |
| 39    |            |    |    |    |    | v  |     |            |    |    | v  |    |    |    |     |
| 40    |            |    |    |    |    | v  |     |            |    |    |    | v  |    |    |     |
| 41    |            |    |    |    |    | v  |     |            |    |    |    |    |    | v  |     |

**Note:**

|    |                                   |     |                                        |
|----|-----------------------------------|-----|----------------------------------------|
| IN | : Certified Internship            | SA  | : Certified Study Abroad               |
| RS | : Certified Research              | IS  | : Certified Specific Independent Study |
| EN | : Certified Entrepreneurship      | FS  | : Further Study                        |
| CD | : Certified Community Development | etc | : Study Program Special Purposes       |

**Description:**

Student will take one of enrichment program tracks

**Certified Internship Track**

| Code                         | Course Name                                                          | SCU | Total |
|------------------------------|----------------------------------------------------------------------|-----|-------|
| <b>Enrichment Program I</b>  |                                                                      |     |       |
| CPEN6129010                  | Computer Engineering Practical Experience I : For Industry Practice  | 8   | 20    |
| CPEN6243010                  | Computer Engineering Technical Analysis I : For Industry Practice    | 8   |       |
| CPEN6245010                  | Computer Engineering EES Experience I : For Industry Practice        | 4   |       |
| <b>Enrichment Program II</b> |                                                                      |     |       |
| CPEN6133010                  | Computer Engineering Practical Experience II : For Industry Practice | 8   | 20    |
| CPEN6244010                  | Computer Engineering Technical Analysis II : For Industry Practice   | 8   |       |
| CPEN6136010                  | Computer Engineering EES Experience II : For Industry Practice       | 4   |       |

**Certified Entrepreneurship Track**

| Code                         | Course Name                                                                                    | SCU | Total |
|------------------------------|------------------------------------------------------------------------------------------------|-----|-------|
| <b>Enrichment Program I</b>  |                                                                                                |     |       |
| ENTR6670010                  | Computer Engineering Practical Experience I : For Entrepreneurship - New Venture Initiation    | 8   | 20    |
| ENTR6671010                  | Computer Engineering Technical Analysis I : For Entrepreneurship - Product Development Process | 8   |       |
| ENTR6672010                  | Computer Engineering EES Experience I: For Entrepreneurship - EES in New Business I            | 4   |       |
| <b>Enrichment Program II</b> |                                                                                                |     |       |
| ENTR6673010                  | Computer Engineering Practical Experience I : For Entrepreneurship - Product Launching         | 8   | 20    |
| ENTR6674010                  | Computer Engineering Technical Analysis I : For Entrepreneurship - Business Development        | 8   |       |
| ENTR6675010                  | Computer Engineering EES Experience I: For Entrepreneurship - EES in New Business II           | 4   |       |

**Certified Research Track**

| Code                         | Course Name                                                          | SCU | Total |
|------------------------------|----------------------------------------------------------------------|-----|-------|
| <b>Enrichment Program I</b>  |                                                                      |     |       |
| RSCH6139010                  | Computer Engineering Practical Experience I : For Research Practice  | 8   | 20    |
| RSCH6537010                  | Computer Engineering Technical Analysis I : For Research Practice    | 8   |       |
| RSCH6539010                  | Computer Engineering EES Experience I : For Research Practice        | 4   |       |
| <b>Enrichment Program II</b> |                                                                      |     |       |
| RSCH6142010                  | Computer Engineering Practical Experience II : For Research Practice | 8   | 20    |
| RSCH6538010                  | Computer Engineering Technical Analysis II : For Research Practice   | 8   |       |
| RSCH6144010                  | Computer Engineering EES Experience II : For Research Practice       | 4   |       |

**Certified Community Development Track**

| Code                         | Course Name                                                                      | SCU | Total |
|------------------------------|----------------------------------------------------------------------------------|-----|-------|
| <b>Enrichment Program I</b>  |                                                                                  |     |       |
| CMDV6059010                  | Computer Engineering Practical Experience I : For Community Development Project  | 8   | 20    |
| CMDV6316010                  | Computer Engineering Technical Analysis I : For Community Development Project    | 8   |       |
| CMDV6318010                  | Computer Engineering EES Experience I: For Community Development Project         | 4   |       |
| <b>Enrichment Program II</b> |                                                                                  |     |       |
| CMDV6062010                  | Computer Engineering Practical Experience II : For Community Development Project | 8   | 20    |
| CMDV6317010                  | Computer Engineering Technical Analysis II : For Community Development Project   | 8   |       |
| CMDV6064010                  | Computer Engineering EES Experience II: For Community Development Project        | 4   |       |

**Certified Study Abroad Track**

| Code                                           | Course Name                         | SCU | Total |
|------------------------------------------------|-------------------------------------|-----|-------|
| <b>Elective courses list for study abroad*</b> |                                     |     |       |
| <b>Enrichment Program I</b>                    |                                     |     |       |
| GLOB6005010                                    | Elective Course for Study Abroad 1  | 4   | 20    |
| GLOB6006010                                    | Elective Course for Study Abroad 2  | 4   |       |
| GLOB6007010                                    | Elective Course for Study Abroad 3  | 4   |       |
| GLOB6008010                                    | Elective Course for Study Abroad 4  | 4   |       |
| GLOB6009010                                    | Elective Course for Study Abroad 5  | 2   |       |
| GLOB6010010                                    | Elective Course for Study Abroad 6  | 2   |       |
| GLOB6011010                                    | Elective Course for Study Abroad 7  | 2   |       |
| GLOB6012010                                    | Elective Course for Study Abroad 8  | 2   |       |
| GLOB6013010                                    | Elective Course for Study Abroad 9  | 2   |       |
| GLOB6014010                                    | Elective Course for Study Abroad 10 | 2   |       |
| GLOB6015010                                    | Elective Course for Study Abroad 11 | 2   |       |
| GLOB6016010                                    | Elective Course for Study Abroad 12 | 2   |       |
| GLOB6249010                                    | Elective Course for Study Abroad 27 | 3   |       |
| GLOB6250010                                    | Elective Course for Study Abroad 28 | 3   |       |
| GLOB6251010                                    | Elective Course for Study Abroad 29 | 4   |       |
| <b>Enrichment Program II</b>                   |                                     |     |       |
| GLOB6017010                                    | Elective Course for Study Abroad 13 | 4   | 20    |
| GLOB6018010                                    | Elective Course for Study Abroad 14 | 4   |       |
| GLOB6019010                                    | Elective Course for Study Abroad 15 | 4   |       |
| GLOB6020010                                    | Elective Course for Study Abroad 16 | 4   |       |
| GLOB6021010                                    | Elective Course for Study Abroad 17 | 2   |       |
| GLOB6022010                                    | Elective Course for Study Abroad 18 | 2   |       |
| GLOB6023010                                    | Elective Course for Study Abroad 19 | 2   |       |
| GLOB6024010                                    | Elective Course for Study Abroad 20 | 2   |       |
| GLOB6025010                                    | Elective Course for Study Abroad 21 | 2   |       |
| GLOB6026010                                    | Elective Course for Study Abroad 22 | 2   |       |
| GLOB6027010                                    | Elective Course for Study Abroad 23 | 2   |       |
| GLOB6028010                                    | Elective Course for Study Abroad 24 | 2   |       |
| GLOB6041010                                    | Elective Course for Study Abroad 25 | 3   |       |
| GLOB6252010                                    | Elective Course for Study Abroad 30 | 3   |       |
| GLOB6253010                                    | Elective Course for Study Abroad 31 | 4   |       |

\*) Transferred courses will be transferred based on credit transfer policies on study program with total of 20 credits.

**Certified Specific Independent Study**

| Code                                                                   | Course Name                                    | SCU | Total |
|------------------------------------------------------------------------|------------------------------------------------|-----|-------|
| <b>Elective courses list for certified specific independent study*</b> |                                                |     |       |
| <b>Enrichment Program I/II</b>                                         |                                                |     |       |
| MICR6033010                                                            | Course Certification I                         | 3   | 20    |
| MICR6034010                                                            | Technical Skill Enrichment I                   | 4   |       |
| MICR6035010                                                            | Industrial Project I                           | 9   |       |
| MICR6036010                                                            | Soft Skill Enrichment I                        | 4   |       |
| MICR6001010                                                            | Elective Course for Micro Credential Course 1  | 8   |       |
| MICR6002010                                                            | Elective Course for Micro Credential Course 2  | 8   |       |
| MICR6003010                                                            | Elective Course for Micro Credential Course 3  | 6   |       |
| MICR6004010                                                            | Elective Course for Micro Credential Course 4  | 6   |       |
| MICR6005010                                                            | Elective Course for Micro Credential Course 5  | 6   |       |
| MICR6006010                                                            | Elective Course for Micro Credential Course 6  | 5   |       |
| MICR6007010                                                            | Elective Course for Micro Credential Course 7  | 5   |       |
| MICR6008010                                                            | Elective Course for Micro Credential Course 8  | 5   |       |
| MICR6009010                                                            | Elective Course for Micro Credential Course 9  | 5   |       |
| MICR6010010                                                            | Elective Course for Micro Credential Course 10 | 4   |       |
| MICR6011010                                                            | Elective Course for Micro Credential Course 11 | 4   |       |
| MICR6012010                                                            | Elective Course for Micro Credential Course 12 | 4   |       |
| MICR6013010                                                            | Elective Course for Micro Credential Course 13 | 4   |       |
| MICR6014010                                                            | Elective Course for Micro Credential Course 14 | 4   |       |
| MICR6015010                                                            | Elective Course for Micro Credential Course 15 | 3   |       |
| MICR6016010                                                            | Elective Course for Micro Credential Course 16 | 3   |       |
| MICR6017010                                                            | Elective Course for Micro Credential Course 17 | 3   |       |
| MICR6018010                                                            | Elective Course for Micro Credential Course 18 | 3   |       |
| MICR6019010                                                            | Elective Course for Micro Credential Course 19 | 3   |       |
| MICR6020010                                                            | Elective Course for Micro Credential Course 20 | 3   |       |
| MICR6021010                                                            | Elective Course for Micro Credential Course 21 | 2   |       |
| MICR6022010                                                            | Elective Course for Micro Credential Course 22 | 2   |       |
| MICR6023010                                                            | Elective Course for Micro Credential Course 23 | 2   |       |
| MICR6024010                                                            | Elective Course for Micro Credential Course 24 | 2   |       |
| MICR6025010                                                            | Elective Course for Micro Credential Course 25 | 2   |       |
| MICR6026010                                                            | Elective Course for Micro Credential Course 26 | 2   |       |
| MICR6027010                                                            | Elective Course for Micro Credential Course 27 | 2   |       |
| MICR6028010                                                            | Elective Course for Micro Credential Course 28 | 2   |       |
| MICR6029010                                                            | Elective Course for Micro Credential Course 29 | 1   |       |
| MICR6030010                                                            | Elective Course for Micro Credential Course 30 | 1   |       |
| MICR6031010                                                            | Elective Course for Micro Credential Course 31 | 1   |       |
| MICR6032010                                                            | Elective Course for Micro Credential Course 32 | 1   |       |

\*) For students who take BINUS certified specific independent study courses, they should take the first 4 courses on the list above (20 credits). Meanwhile, electives courses 1 to 32 are transferred courses for students who take certified specific independent study outside BINUS University. Transferred courses will be transferred based on credit transfer policies on study program with total of 20 credits.

**Further Study Track**

| Code                                                                                                                     | Course Name                                 | SCU | Total |
|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|-----|-------|
| <b>Enrichment Program II (Master of Management Information Systems: Information Systems Strategic Management Stream)</b> |                                             |     |       |
| ISYS6829010                                                                                                              | Digital Technology and Transformation       | 4   | 20    |
| ISYS6830010                                                                                                              | Data Analytics for Business                 | 6   |       |
| ISYS6836010                                                                                                              | Applied Technology in Computer Engineering* | 4   |       |
| ISYS6849010                                                                                                              | Strategic Planning for Information Systems  | 6   |       |
| <b>Enrichment Program II (Master of Management Information Systems: Digitalpreneurship Stream)</b>                       |                                             |     |       |
| ISYS6829010                                                                                                              | Digital Technology and Transformation       | 4   | 20    |
| ISYS6830010                                                                                                              | Data Analytics for Business                 | 6   |       |
| ISYS6836010                                                                                                              | Applied Technology in Computer Engineering* | 4   |       |
| ISYS6848010                                                                                                              | New Media Ventures and Innovation           | 6   |       |
| <b>Enrichment Program II (Master of Industrial Engineering)</b>                                                          |                                             |     |       |
| ISYE6314010                                                                                                              | Applied Supply Chain Excellence             | 6   | 20    |
| ISYE6228010                                                                                                              | System Simulation and Modelling             | 6   |       |
| ISYE6320010                                                                                                              | Applied Technology in Computer Engineering* | 4   |       |
| RSCH6606010                                                                                                              | Research Methodology                        | 4   |       |

\*) Students are required to obtain certification no later than the end of the first semester of the master's (S2) program, as outlined in the university's official guidelines. This certification will be transferred as an undergraduate (S1) course and reported in the seventh semester of the undergraduate program.

**Student should pass all of these quality controlled courses as listed below:**

| No. | Course Code | Course Name                                  | Minimal Grade |
|-----|-------------|----------------------------------------------|---------------|
| 1.  | CHAR6013010 | Character Building: <i>Pancasila</i>         | B             |
| 2.  | COMP6692010 | Physical Computing & Algorithm*              | C             |
| 3.  | STAT6151010 | Probability & Statistic                      | C             |
| 4.  | CPEN6219010 | Circuit & Electronics*                       | C             |
| 5.  | CPEN6246010 | Digital System                               | C             |
| 6.  | CPEN6220010 | Computer Network & Information Security      | C             |
| 7.  | CPEN6230010 | IOT Design & Application                     | C             |
| 8.  | CPEN6222010 | Mobile Application Development for Engineer* | C             |
| 9.  | ENTR6511001 | Entrepreneurship: Market Validation          | C             |

\*) Tutorial & Multipaper