

**Study Scheme: UG Programme
(2021 Batch onwards)**

B.E. in Computer Science and Engineering

Vision & Mission of Department

Vision

To achieve technical & research excellence in the field of Computer Science and Engineering with industrial & social perspective.

Mission

- To provide environment for imparting high quality technical education, skill development, research and development.
- To disseminate sound knowledge of recent Computer Technologies by organizing seminar/workshops/short-term courses.
- To develop interaction and collaboration with the industry.
- To facilitate Hand-on training to the students for promoting Self-Employment.

Program Outcomes (PO's) – UG

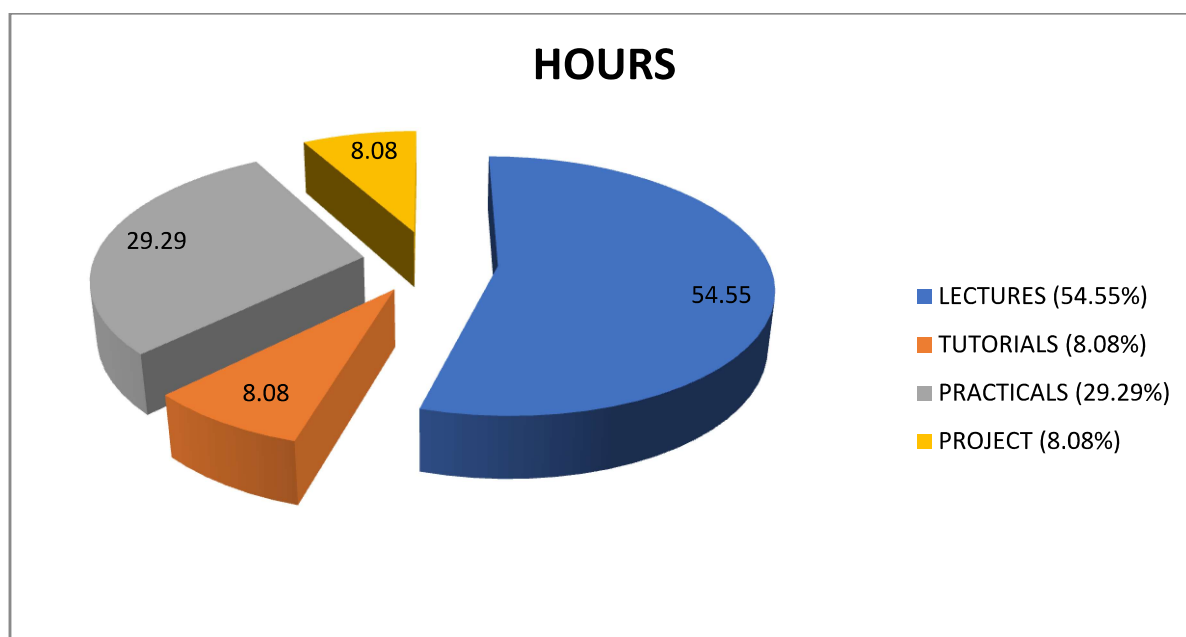
- 1) **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- 2) **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- 3) **Design / Development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- 4) **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- 5) **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- 6) **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- 7) **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- 8) **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- 9) **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- 10) **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- 11) **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

- 12) Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

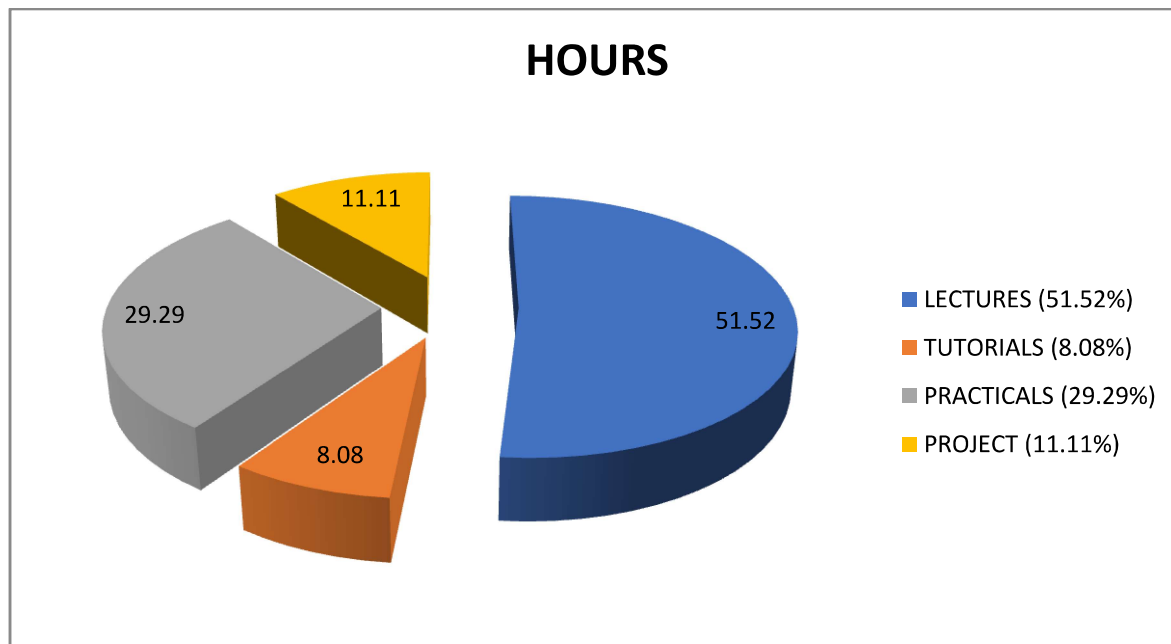
Program Specific Outcomes (PSO's) – UG

- 1) Program Specific Outcome (PSO) 1:** The ability to understand, analyse and develop computer programs in the areas related to algorithms, system software, multimedia, web design, big data analytics, and networking for efficient design of computer-based systems of varying complexity.
- 2) Program Specific Outcome (PSO) 2:** The ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur, lifelong learning and a zest for higher studies and also to act as a good citizen by inculcating in them moral values & ethics.

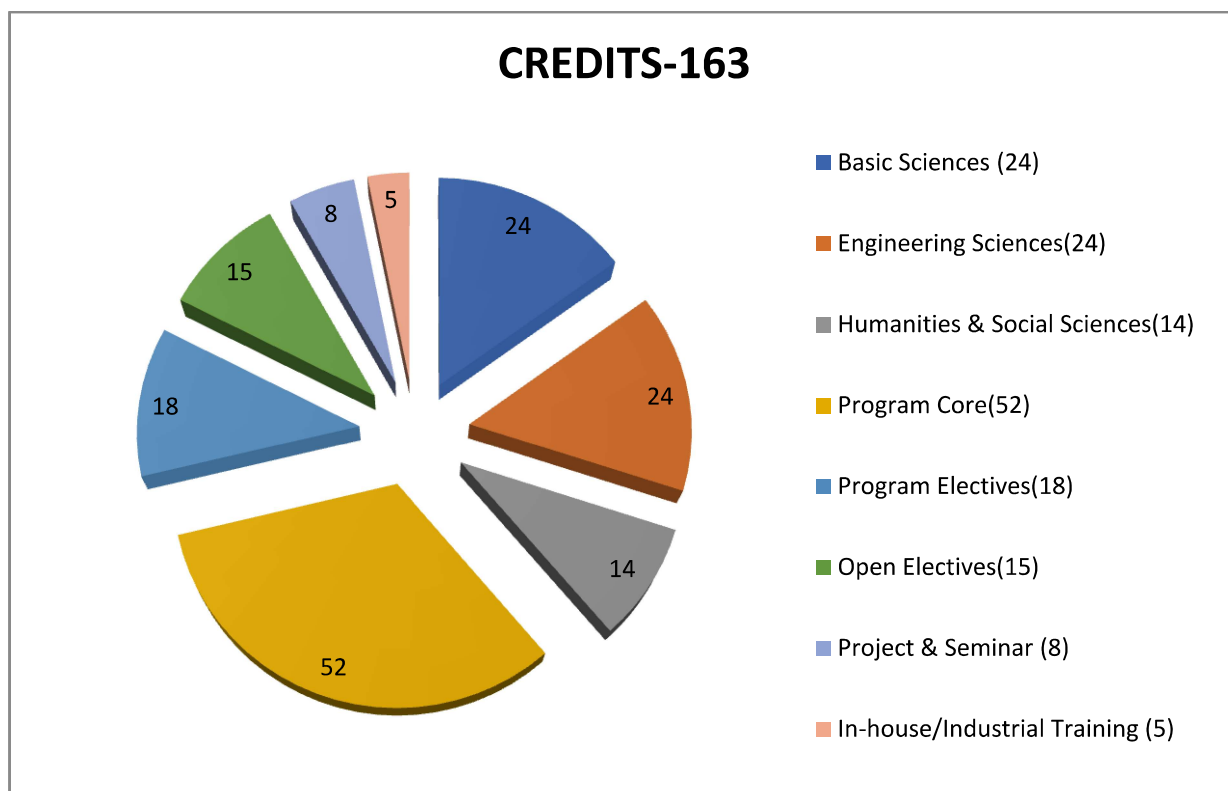
CONTACT HOURS DISTRIBUTION (UG)



CONTACT HOURS DISTRIBUTION (UG) OPTING INTERNSHIP IN INDUSTRY



DISTRIBUTION OF COURSE CREDITS (UG)



Study Scheme UG Programme: B.E. in Computer Science and Engineering

Semester-I							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	BSMA-401	Engineering Mathematics I	3	1	0	4	4
2	BSPH-401	Applied Physics	3	1	0	4	4
3	ESEE-401	Elements of Electrical Engineering	2	1	0	3	3
4	ESCS-401	Elements of Computer Engineering	2	0	0	2	2
5	ESEC-401	Elements of Electronics Engineering	2	0	0	2	2
6	BSPH-402	Applied Physics Lab	0	0	2	2	1
7	ESEE-402	Elements of Electrical Engineering Lab	0	0	2	2	1
8	ESCS-402	Elements of Computer Engineering Lab	0	0	4	4	2
9	ESEC-402	Elements of Electronics Engineering Lab	0	0	2	2	1
		Total	12	3	10	25	20

Semester-II A							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	BSMA-402	Engineering Mathematics II	3	1	0	4	4
2	BSCH-401	Applied Chemistry	3	1	0	4	4
3	ESME-401	Elements of Mechanical Engineering	2	1	0	3	3
4	ESME-402	Workshop Technology and Practice	1	0	0	1	1
5	HSMC-401	English Communication and Soft Skills	1	0	0	1	1
6	BSCH-402	Applied Chemistry Lab	0	0	2	2	1
7	ESME-403	Elements of Mechanical Engineering Lab	0	0	2	2	1
8	ESME-404	Engineering Drawing	0	0	4	4	2
9	ESME-405	Workshop Technology and Practice Lab	0	0	4	4	2
10	HSMC-402	English Communication and Soft Skills Lab	0	0	2	2	1
11	MCCH-401	Environmental Studies	3	0	0	3	0
		Total	13	3	14	30	20

Semester-IIB							
1	TPIN-421	Practical Training During Summer Vacations (In-house) 02 weeks				40	1 (S/US)
2	TPIN-422	Technical Competency				40	1 (S/US)

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Semester-III							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	BSMA-501	Numerical and Statistical Methods	3	0	0	3	3
2	PCCS-511	Digital Electronics	3	0	0	3	3
3	PCCS-512	Object Oriented Programming	2	1	0	3	3
4	PCCS-513	Data Structures	2	1	0	3	3
5	BSBL-501	Biology for Engineers	2	0	0	2	2
6	MCUG-501	Universal Human Values-II: Understanding Harmony	3	0	0	3	3
7	BSMA-502	Numerical and Statistical Methods Lab	0	0	2	2	1
8	PCCS-514	Digital Electronics Lab	0	0	2	2	1
9	PCCS-515	Object Oriented Programming Lab	0	0	4	4	2
10	PCCS-516	Data Structures Lab	0	0	4	4	2
		Total	15	2	12	29	23

Semester-IVA							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	ESME-501	Engineering Mechanics	3	1	0	4	4
2	PCCS-521	Computer Organization and Architecture	3	0	0	3	3
3	PCCS-522	Operating System	3	0	0	3	3
4	PCCS-523	Database Management System	2	1	0	3	3
5	HSMC-501	Principles of Management	3	0	0	3	3
6	PCCS-524	Operating System Lab	0	0	4	4	2
7	PCCS-525	Database Management System Lab	0	0	4	4	2
8	MCMH-501	Indian Constitution	3	0	0	3	0
		Total	17	2	8	27	20

Semester-IVB							
1	TPID-521	Industrial Training 02 weeks				40	1 (S/US)
2	EAA-521+	Fractional credit course/Extra Academic Activity + GROUP A/B/C				40	1 (S/US)

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Semester-VA

S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	PCCS-611	Discrete Mathematics	2	1	0	3	3
2	PCCS-612	Computer Networks	2	1	0	3	3
3	OECS-611	Open Elective-1	3	0	0	3	3
4	OECS-612	Open Elective-2	3	0	0	3	3
5	PECS-611	Professional Elective-1	3	0	0	3	3
6	HSMC-601	Technical Communication	2	0	0	2	2
7	PCCS-613	Computer Networks Lab	0	0	4	4	2
8	HSMC-602	Technical Communication Lab	0	0	2	2	1
		Total	15	2	6	23	20

Semester-V B

1	EAA-611+	Fractional credit course/Extra Academic Activity +GROUP A/B/C				40	1 (S/US)
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Semester-VI A

S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	PCCS-621	Design and Analysis of Algorithm	2	1	0	3	3
2	PCCS-622	Automata Theory and Formal Languages	2	1	0	3	3
3	OECS-621	Open Elective-3	3	0	0	3	3
4	OECS-622	Open Elective-4	3	0	0	3	3
5	PECS-621	Professional Elective-2	3	0	0	3	3
6	HSMC-603	Engineering Economics and Entrepreneurship	3	0	0	3	3
7	PCCS-623	Design and Analysis of Algorithm Lab	0	0	4	4	2
		Total	16	2	4	22	20

Semester-VI B

1	TPID-621	Industrial Training 04 weeks				40	2 (S/US)
2	EAA-622+	Fractional credit course/Extra Academic Activity + GROUP A/B/C				40	1 (S/US)

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Semester-VII

S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	PCCS-711	Internet Programming	2	1	0	3	3
2	PCCS-712	Compiler Design	3	1	0	4	4
3	PECS-711	Professional Elective-3	3	0	0	3	3
4	PECS-712	Professional Elective-4	3	0	0	3	3
5	OECS-711	Open Elective-5	3	0	0	3	3
6	PCCS-713	Internet Programming Lab	0	0	4	4	2
7	PRCS-711	Project Stage I and Seminar	0	0	4	4	2
		Total	14	2	8	24	20

Semester-VIII

S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	PECS-721	Professional Elective-5	3	0	0	3	3
2	PECS-722	Professional Elective-6	3	0	0	3	3
3	PRCS-721	Project Stage II	0	0	12	12	6
		Total	6	0	12	18	12
OR							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	INID-721	Internship in Industry					6
2	PRCS-721	Project Stage II	0	0	12	12	6
		Total	0	0	12	12	12

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LIST OF OPEN ELECTIVES							
S. No	Sub. Code	Subject Name	L	T	P	Hrs.	Credits
1		Open Elective-I	3	0	0	3	3
	OECS-611A	Software Engineering	3	0	0	3	3
	OECS-611B	Enterprise Resource Planning	3	0	0	3	3
	OECS-611C	Cyber Laws and Ethics	3	0	0	3	3
	OECS-611D	Programming Methodology	3	0	0	3	3
	OECS-611E	Data Preparation and Analysis	3	0	0	3	3
2		Open Elective-II	3	0	0	3	3
	OECS-612A	Software Project Management	3	0	0	3	3
	OECS-612B	Decision Support System	3	0	0	3	3
	OECS-612C	Computer Networks	3	0	0	3	3
	OECS-612D	Object Oriented Programming	3	0	0	3	3
	OECS-612E	Database Management System	3	0	0	3	3
3		Open Elective-III	3	0	0	3	3
	OECS-621A	Requirement Engineering	3	0	0	3	3
	OECS-621B	Management Information System	3	0	0	3	3
	OECS-621C	Cyber Security	3	0	0	3	3
	OECS-621D	Internet Programming	3	0	0	3	3
	OECS-621E	Database Integrity and Security	3	0	0	3	3
4		Open Elective-IV	3	0	0	3	3
	OECS-622A	Object Oriented Analysis and Design	3	0	0	3	3
	OECS-622B	E-Commerce	3	0	0	3	3
	OECS-622C	Computer Network Security	3	0	0	3	3
	OECS-622D	Computer Graphics	3	0	0	3	3
	OECS-622E	Data Analytics	3	0	0	3	3

5		Open Elective-V	3	0	0	3	3
	OECS-711A	Software Reliability and Testing	3	0	0	3	3
	OECS-711B	Human Resource Management	3	0	0	3	3
	OECS-711C	Cyber Forensics	3	0	0	3	3
	OECS-711D	Multimedia and Animation	3	0	0	3	3
	OECS-711E	Data Mining	3	0	0	3	3

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LIST OF PROFESSIONAL ELECTIVES							
Sr.No	Sub. Code	Subject Name	L	T	P	Hrs.	Credits
1		Professional Elective-I					
	PECS-611A	Computer Graphics	3	0	0	3	3
	PECS-611B	Data Mining	3	0	0	3	3
	PECS-611C	Cyber Laws and Ethics	3	0	0	3	3
	PECS-611D	Software Engineering	3	0	0	3	3
	PECS-611E	Enterprise Resource Planning	3	0	0	3	3
	PECS-611F	Network Operating System	3	0	0	3	3
2		Professional Elective-II					
	PECS-621A	Multimedia and Animation	3	0	0	3	3
	PECS-621B	Artificial Intelligence	3	0	0	3	3
	PECS-621C	Cyber Security	3	0	0	3	3
	PECS-621D	Software Project Management	3	0	0	3	3
	PECS-621E	Decision Support System	3	0	0	3	3
	PECS-621F	Advanced Computer Architecture	3	0	0	3	3
3		Professional Elective-III					
	PECS-711A	Image Processing	3	0	0	3	3
	PECS-711B	Soft Computing	3	0	0	3	3
	PECS-711C	Cyber Forensics	3	0	0	3	3
	PECS-711D	Requirement Engineering	3	0	0	3	3
	PECS-711E	Management Information System	3	0	0	3	3
	PECS-711F	Distributed System	3	0	0	3	3
4		Professional Elective-IV					
	PECS-712A	Simulation and Modeling	3	0	0	3	3
	PECS-712B	Machine Learning	3	0	0	3	3
	PECS-712C	Adhoc and Wireless Sensor Networks	3	0	0	3	3

	PECS-712D	Object Oriented Analysis and Design	3	0	0	3	3
	PECS-712E	E-Commerce	3	0	0	3	3
	PECS-712F	Parallel Computing	3	0	0	3	3
5		Professional Elective-V					
	PECS-721A	Digital Signal Processing	3	0	0	3	3
	PECS-721B	Neural Networks and Deep Learning	3	0	0	3	3
	PECS-721C	Cyber Threat Intelligence	3	0	0	3	3
	PECS-721D	Software Reliability and Testing	3	0	0	3	3
	PECS-721E	Business Management System	3	0	0	3	3
	PECS-721F	Cloud Computing	3	0	0	3	3
6		Professional Elective-VI					
	PECS-722A	Parallel Algorithms	3	0	0	3	3
	PECS-722B	Computer Vision	3	0	0	3	3
	PECS-722C	High Speed Communication Networks	3	0	0	3	3
	PECS-722D	Software Quality Assurance	3	0	0	3	3
	PECS-722E	Human Resource Management	3	0	0	3	3
	PECS-722F	Embedded Systems	3	0	0	3	3

BACHELOR OF ENGINEERING (MINOR) COMPUTER SCIENCE AND ENGINEERING

Semester-IV							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	MDCS-521	Internet Technologies	3	1	0	4	4
		Total	3	1	0	4	4

Semester-V							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	MDCS-611	Data Structures and Algorithms	3	1	0	4	4
		Total	3	1	0	4	4

Semester-VI							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	MDCS-621	Artificial Intelligence	3	1	0	4	4
		Total	3	1	0	4	4

Semester-VII							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	MDCS-711	Machine Learning	3	1	0	4	4
		Total	3	1	0	4	4

Semester-VIII							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	MDCS-721	Cloud Computing	3	1	0	4	4
		Total	3	1	0	4	4

BACHELOR OF ENGINEERING (HONORS) COMPUTER SCIENCE AND ENGINEERING

Semester-V							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	HDCS-611	Data Analytics	3	1	0	4	4
2	HDCS-612	Internet of Things	3	1	0	4	4
		Total	6	2	0	8	8

Semester-VI							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	HDCS-621	Optimization Techniques	3	1	0	4	4
		Total	3	1	0	4	4

Semester-VII							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	HDCS-711	Cryptography and Network Security	3	1	0	4	4
		Total	3	1	0	4	4

Semester-VIII							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	PHCS-721	Project Hon's	0	0	08	08	4
		Total	0	0	08	08	4